

Background of the HAARP Project

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Military interest in space became intense during and after World War II because of the introduction of rocket science, the companion to nuclear technology. The early versions include the buzz bomb and guided missiles. They were thought of as potential carriers of both nuclear and conventional bombs.

Rocket technology and nuclear weapon technology developed simultaneously between 1945 and 1963. During this time of intensive atmospheric nuclear testing, explosions at various levels above and below the surface of the earth were attempted. Some of the now familiar descriptions of the earth's protective atmosphere, such as the existence of the Van Allen belts, were based on information gained through stratospheric and ionospheric experimentation.

The earth's atmosphere consists of the troposphere, from sea level to about 16 km above the earth's surface; the stratosphere (which contains the ozone level) which extends from about the 16 to 48 km above the earth; and the ionosphere which extends from 48 km to over 50,000 km above the surface of the earth.

The earth's protective atmosphere or "skin" extends beyond 3,200 km above sea level to the large magnetic fields, called the Van Allen Belts, which can capture the charged particles sprayed through the cosmos by the solar and galactic winds. These belts were discovered in 1958 during the first weeks of the operation of America's first satellite, Explorer I. They appear to contain charged particles trapped in the earth's gravity and magnetic fields. Primary galactic cosmic rays enter the solar system from interstellar space, and are made up of protons with energies above 100 MeV, extending up to astronomically high energies. They make up about 100 percent of the high energy rays. Solar rays are generally of lower energy, below 20 MeV (which is still high energy in earth terms). These high energy

particles are affected by the earth's magnetic field and by geomagnetic latitude (distance above or below the geomagnetic equator). The flux density of low energy protons at the top of the atmosphere is normally greater at the poles than at the equator. The density also varies with solar activity, being at a minimum when solar flares are at a minimum.

The Van Allen belts capture charged particles (protons, electrons and alpha particles) and these spiral along the magnetic force lines toward the polar regions where the force lines converge. They are reflected back and forth between the magnetic force lines near the poles. The lower Van Allen Belt is about 7700 km above the earth's surface, and the outer Van Allen Belt is about 51,500 km above the surface. According to the Encyclopedia Britannica, the Van Allen belts are most intense along the equator, and effectively absent over the poles. They dip to 400 km over the South Atlantic Ocean, and are about 1,000 km high over the Central Pacific Ocean. In the lower Van Allen Belt, the proton intensity is about 20,000 particles with energy above 30 MeV per second per square centimeter. Electrons reach a maximum energy of 1 MeV, and their intensity has a maximum of 100 million per second per square centimeter. In the outer Belt, proton energy averages only 1 MeV. For comparison, most charged particles discharged in a nuclear explosion range between 0.3 and 3 MeV, while diagnostic medical X-ray has peak voltage around 0.5 MeV.

Project Argus (1958)

Between August and September 1958, the US Navy exploded three fission type nuclear bombs 480 km above the South Atlantic Ocean, in the part of the lower Van Allen Belt closest to the earth's surface. In addition, two hydrogen bombs were detonated 160 km over Johnston Island in the Pacific. The military called this "the biggest scientific experiment ever undertaken." It was designed by the US Department of Defense and the US Atomic Energy Commission, under the code name Project Argus. The purpose appears to be to assess the impact of high altitude nuclear explosions on radio transmission and radar

operations because of the electromagnetic pulse (EMP), and to increase understanding of the geomagnetic field and the behavior of the charged particles in it.

This gigantic experiment created new (inner) magnetic radiation belts encompassing almost the whole earth, and injected sufficient electrons and other energetic particles into the ionosphere to cause world wide effects. The electrons traveled back and forth along magnetic force lines, causing an artificial "aurora" when striking the atmosphere near the North Pole.

The US Military planned to create a "telecommunications shield" in the ionosphere, reported in 13-20 August 1961, Keesings Historisch Archief (K.H.A.). This shield would be created "in the ionosphere at 3,000 km height, by bringing into orbit 350,000 million copper needles, each 2-4 cm long [total weight 16 kg], forming a belt 10 km thick and 40 km wide, the needles spaced about 100 m apart." This was designed to replace the ionosphere "because telecommunications are impaired by magnetic storms and solar flares." The US planned to add to the number of copper needles if the experiment proved to be successful. This plan was strongly opposed by the Intentional Union of Astronomers.

Project Starfish (1962)

On July 9, 1962, the US began a further series of experiments with the ionosphere. From their description: "one kiloton device, at a height of 60 km and one megaton and one multi-megaton, at several hundred kilometers height" (K.H.A., 29 June 1962). These tests seriously disturbed the lower Van Allen Belt, substantially altering its shape and intensity. "In this experiment the inner Van Allen Belt will be practically destroyed for a period of time; particles from the Belt will be transported to the atmosphere. It is anticipated that the earth's magnetic field will be disturbed over long distances for several hours, preventing radio communication. The explosion in the inner radiation belt will create an artificial dome of polar light that will be visible from Los Angeles" (K.H.A. 11 May 1962). A Fijian Sailor, present at this

nuclear explosion, told me that the whole sky was on fire and he thought it would be the end of the world. This was the experiment which called forth the strong protest of the Queen's Astronomer, Sir Martin Ryle in the UK.

"The ionosphere [according to the understanding at that time] that part of the atmosphere between 65 and 80 km and 280- 320 km height, will be disrupted by mechanical forces caused by the pressure wave following the explosion. At the same time, large quantities of ionizing radiation will be released, further ionizing the gaseous components of the atmosphere at this height. This ionization effect is strengthened by the radiation from the fission products... The lower Van Allen Belt, consisting of charged particles that move along the geomagnetic field lines... will similarly be disrupted. As a result of the explosion, this field will be locally destroyed, while countless new electrons will be introduced into the lower belt" (K.H.A. 11 May 1962). "On 19 July... NASA announced that as a consequence of the high altitude nuclear test of July 9, a new radiation belt had been formed, stretching from a height of about 400 km to 1600 km; it can be seen as a temporary extension of the lower Van Allen Belt" (K.H.A. 5 August 1962).

As explained in the Encyclopedia Britannica: "... Starfish made a much wider belt [than Project Argus] that extends from low altitude out past $L=3$ [i.e. three earth radiuses or about 13,000 km above the surface of the earth]." Later in 1962, the USSR undertook similar planetary experiments, creating three new radiation belts between 7,000 and 13,000 km above the earth. According to the Encyclopedia, the electron fluxes in the lower Van Allen Belt have changed markedly since the 1962 high- altitude nuclear explosions by the US and USSR, never returning to their former state. According to American scientists, it could take many hundreds of years for the Van Allen Belts to destabilize at their normal levels. (Research done by: Nigel Harle, Borderland Archives, Cortenbachstraat 32, 6136 CH Sittard, Netherlands.)

SPS: Solar Power Satellite Project (1968)

In 1968 the US military proposed Solar Powered Satellites in geostationary orbit some 40,000 km above the earth, which would intercept solar radiation using solar cells on satellites and transmit it via a microwave beam to receiving antennas, called rectennas, on earth. The US Congress mandated the Department of Energy and NASA to prepare an Environmental Impact Assessment on this project, to be completed by June 1980, and costing \$25 Million. This project was designed to construct 60 Solar Powered Satellites over a thirty year period at a cost between \$500 and \$800 thousand million (in 1968 dollars), providing 100 percent of the US energy needs in the year 2025 at a cost of \$3000 per kW. At that time, the project cost was two to three times larger than the whole Department of Energy budget, and the projected cost of the electricity was well above the cost of most conventional energy sources. The rectenna sites on earth were expected to take up to 145 square kilometers of land, and would preclude habitation by any humans, animals or even vegetation. Each Satellite was to be the size of Manhattan Island.

Saturn V Rocket (1975)

Due to a malfunction, the Saturn V Rocket burned unusually high in the atmosphere, above 300 km. This burn produced "a large ionospheric hole" (Mendillo, M. Et al., Science p. 187, 343, 1975). The disturbance reduced the total electron content more than 60% over an area 1,000 km in radius, and lasted for several hours. It prevented all telecommunications over a large area of the Atlantic Ocean. The phenomenon was apparently caused by a reaction between the exhaust gases and ionospheric oxygen ions. The reaction emitted a 6300 A airglow. Between 1975 and 1981 NASA and the US Military began to design ways to test this new phenomena through deliberate experimentation with the ionosphere.

SPS Military Implications (1978)

Early review of the Solar Powered Satellite Project began in around 1978, and I was on the review panel. Although this was proposed as

an energy program, it had significant military implications. One of the most significant, first pointed out by Michael J. Ozeroff, was the possibility of developing a satellite-borne beam weapon for anti-ballistic missile (ABM) use. The satellites were to be in geosynchronous orbits, each providing an excellent vantage point from which an entire hemisphere can be surveyed continuously. It was speculated that a high-energy laser beam could function as a thermal weapon to disable or destroy enemy missiles. There was some discussion of electron weapon beams, through the use of a laser beam to preheat a path for the following electron beam.

The SPS was also described as a psychological and anti-personnel weapon, which could be directed toward an enemy. If the main microwave beam was redirected away from its rectenna, toward enemy personnel, it could use an infrared radiation wavelength (invisible) as an anti-personnel weapon. It might also be possible to transmit high enough energy to ignite combustible materials. Laser beam power relays could be made from the SPS satellite to other satellites or platforms, for example aircraft, for military purposes. One application might be a laser powered turbofan engine which would receive the laser beam directly in its combustion chamber, producing the required high temperature gas for its cruising operation. This would allow unlimited on-station cruise time. As a psychological weapon, the SPS was capable of causing general panic

The SPS would be able to transmit power to remote military operations anywhere needed on earth. The manned platform of the SPS would provide surveillance and early warning capability, and ELF linkage to submarines. It would also provide the capability of jamming enemy communications. The potential for jamming and creating communications is significant. The SPS was also capable of causing physical changes in the ionosphere

President Carter approved the SPS Project and gave it a go-ahead, in spite of the reservation which many reviewers, myself included, expressed. Fortunately, it was so expensive, exceeding the entire

Department of Energy budget, that funding was denied by the Congress. I approached the United Nations Committee on Disarmament on this project, but was told that as long as the program was called Solar Energy by the United States, it could not be considered a weapons project. The same project resurfaced in the US under President Reagan. He moved it to the much larger budget of the Department of Defense and called it Star Wars. Since this is more recent history, I will not discuss the debate which raged over this phase of the plan.

By 1978, it was apparent to the US Military that communications in a nuclear hostile environment would not be possible using traditional methods of radio and television technology (Jane's Military Communications 1978). By 1982, GTE Sylvania (Needham Heights, Massachusetts) had developed a command control electronic subsystem for the US Air Force's Ground Launch Cruise Missiles (GLCM) that would enable military commanders to monitor and control the missile prior to launch both in hostile and non-hostile environments. The system contains six radio subsystems, created with visible light using a dark beam (not visible) and is resistant to the disruptions experienced by radio and television. Dark beams contribute to the formation of energetic plasma in the atmosphere. This plasma can become visible as smog or fog. Some has a different charge than the sun's energy, and accumulates in places where the sun's energy is absent, like the polar regions in the winter. When the polar spring occurs, the sun appears and repels this plasma, contributing to holes in the ozone layer. This military system is called: Ground Wave Emergency Network (GWEN). (See The SECOMII Communication System, by Wayne Olsen, SAND 78- 0391, Sandia Laboratories, Albuquerque, New Mexico, April 1978.) This innovative emergency radio system was apparently never implemented in Europe, and exists only in North America.

Orbit Maneuvering System (1981)

Part of the plan to build the SPS space platforms was the demand for reusable space shuttles, since they could not afford to keep discarding rockets. The NASA Spacelab 3 Mission of the Space Shuttle made, in 1981, "a series of passes over a network of five ground based observatories" in order to study what happened to the ionosphere when the Shuttle injected gases into it from the Orbit Maneuvering System (OMS). They discovered that they could "induce ionospheric holes" and began to experiment with holes made in the daytime, or at night over Millstone, Connecticut, and Arecibo, Puerto Rico. They experimented with the effects of "artificially induced ionospheric depletions on very low frequency wave lengths, on equatorial plasma instabilities, and on low frequency radio astronomical observations over Roberval, Quebec, Kwajalein, in the Marshall Islands and Hobart, Tasmania" (Advanced Space Research, Vo1.8, No. 1, 1988).

Innovative Shuttle Experiments (1985)

An innovative use of the Space Shuttle to perform space physics experiments in earth orbit was launched, using the OMS injections of gases to "cause a sudden depletion in the local plasma concentration, the creation of a so called ionospheric hole." This artificially induced plasma depletion can then be used to investigate other space phenomena, such as the growth of the plasma instabilities or the modification of radio propagation paths. The 47 second OMS burn of July 29, 1985, produced the largest and most long-lived ionospheric hole to date, dumping some 830 kg of exhaust into the ionosphere at sunset. A 6 second, 68 km OMS release above Connecticut in August 1985, produced an airglow which covered over 400,000 square km.

During the 1980's, rocket launches globally numbered about 500 to 600 a year, peaking at 1500 in 1989. There were many more during the Gulf War. The Shuttle is the largest of the solid fuel rockets, with twin 45 meter boosters. All solid fuel rockets release large amounts of hydrochloric acid in their exhaust, each Shuttle flight injecting about 75 tons of ozone destroying chlorine into the stratosphere. Those

launched since 1992 inject even more ozone-destroying chlorine, about 187 tons, into the stratosphere (which contains the ozone layer).

Mighty Oaks (1986)

In April 1986, just before the Chernobyl disaster, the US had a failed hydrogen test at the Nevada Test Site called Mighty Oaks. This test, conducted far underground, consisted of a hydrogen bomb explosion in one chamber, with a leaded steel door to the chamber, two meters thick, closing within milliseconds of the blast. The door was to allow only the first radioactive beam to escape into the "control room" in which expensive instrumentation was located. The radiation was to be captured as a weapon beam. The door failed to close as quickly as planned, causing the radioactive gases and debris to fill the control room, destroying millions of dollars worth of equipment. The experiment was part of a program to develop X-ray and particle beam weapons. The radioactive releases from Mighty Oaks were vented, under a "licensed venting" and were likely responsible for many of the North American nuclear fallout reports in May 1986, which were attributed to the Chernobyl disaster.

Desert Storm (1991)

According to Defense News, April 13 - 19, 1992, the US deployed an electromagnetic pulse weapon (EMP) in Desert Storm, designed to mimic the flash of electricity from a nuclear bomb. The Sandia National Laboratory had built a 23,000 square meter laboratory on the Kirkland Air Force Base, 1989, to house the Hermes II electron beam generator capable of producing 20 Trillion Watt pulses lasting 20 billionths to 25 billionths of a second. This X-ray simulator is called a Particle Beam Fusion Accelerator. A stream of electrons hitting a metal plate can produce a pulsed X-ray or gamma ray. Hermes II had produced electron beams since 1974. These devices were apparently tested during the Gulf War, although detailed information on them is sparse.

High Frequency Active Auroral Research Program, HAARP (1993)

The HAARP Program is jointly managed by the US Air Force and the US Navy, and is based in Gakona, Alaska. It is designed to "understand, simulate and control ionospheric processes that might alter the performance of communication and surveillance systems." The HAARP system intends to beam 3.6 Gigawatts of effective radiated power of high frequency radio energy into the ionosphere in order to:

- Generate extremely low frequency (ELF) waves for communicating with submerged submarines
- Conduct geophysical probes to identify and characterize natural ionospheric processes so that techniques can be developed to mitigate or control them
- Generate ionospheric lenses to focus large amounts of high frequency energy, thus providing a means of triggering ionospheric processes that potentially could be exploited for Department of Defense purposes,
- Electron acceleration for infrared (IR) and other optical emissions which could be used to control radio wave propagation properties
- Generate geomagnetic field aligned ionization to control the reflection/scattering properties of radio waves,
- Use oblique heating to produce effects on radio wave propagation, thus broadening the potential military applications of ionospheric enhancement technology.

Poker Flat Rocket Launch (1968 to Present)

The Poker Flat Research Range is located about 50 km North of Fairbanks, Alaska, and it was established in 1968. It is operated by the Geophysical Institute with the University of Alaska Fairbanks, under NASA contract. About 250 major rocket launches have taken place from this site, and in 1994, a 16 meter long rocket was launched to help NASA "understand chemical reactions in the atmosphere associated with global climate change." Similar experiments, but

using Chemical Release Modules (CRM), have been launched from Churchill, Manitoba. In 1980, Brian Whelan's "Project Waterhole" disrupted an aurora borealis, bringing it to a temporary halt. In February 1983, the chemical released into the ionosphere caused an aurora borealis over Churchill. In March 1989, two Black Brant X's and two Nike Orion rockets were launched over Canada, releasing barium at high altitudes and creating artificial clouds. These Churchill artificial clouds were observed from as far away as Los Alamos, New Mexico.

The US Navy has also been carrying on High Power Auroral Stimulation (HIPAS) research in Alaska. Through a series of wires and a 15 meter antenna, they have beamed high intensity signals into the upper atmosphere, generating a controlled disturbance in the ionosphere. As early as 1992, the Navy talked of creating 10 kilometer long antennas in the sky to generate extremely low frequency (ELF) waves needed for communicating with submarines. Another purpose of these experiments is to study the Aurora Borealis, called by some an outdoor plasma lab for studying the principles of fusion. Shuttle flights are now able to generate auroras with an electron beam. On November 10, 1991, an aurora borealis appeared in the Texas sky for the first time ever recorded, and it was seen by people as far away as Ohio and Utah, Nebraska and Missouri. The sky contained "Christmas colors" and various scientists were quick to blame it on solar activity. However, when pressed most would admit that the ionosphere must have been weakened at the time, so that the electrically charged particle hitting the earth's atmosphere created the highly visible light called airglow. These charged particles are normally pulled northwards by the earth's magnetic forces, to the magnetic north pole. The Northern Lights, as the aurora borealis is called, normally occurs in the vortex at the pole where the energetic particles, directed by the magnetic force lines, are directed.

Conclusions

It would be rash to assume that HAARP is an isolated experiment which would not be expanded. It is related to fifty years of intensive

and increasingly destructive programs to understand and control the upper atmosphere.

It would be rash not to associate HAARP with the space laboratory construction which is separately being planned by the United States. HAARP is an integral part of a long history of space research and development of a deliberate military nature.

The military implications of combining these projects is alarming.

Basic to this project is control of communications, both disruption and reliability in hostile environments. The power wielded by such control is obvious.

The ability of the HAARP / Spacelab/ rocket combination to deliver very large amount of energy, comparable to a nuclear bomb, anywhere on earth via laser and particle beams, are frightening.

The project is likely to be "sold" to the public as a space shield against incoming weapons, or, for the more gullible, a devise for repairing the ozone layer.

Further References:

C.L. Herzenberg, Physics and Society, April 1994.

R. Williams, Physics and Society, April 1988.

B. Eastlund, Microwave News, May/June 1994.

W. Kofinan and C. Lathuillere, Geophysical Research Letters, Vol 14, No. 11, pp 1158-1161, November 1987 (Includes French experiments at EISCAT).

G. Metz and F.W. Perkins. Ionospheric Modification Theory: Past Present and Future, Radio Science, Vo1.9, No. 11, pp 885 -888, November 1974.

Vandalism In The Sky

Prepared by Dr. Nick Begich and Jeane Mann

Techno-Net is the protest form of the 1990s -- picketing on the information highways. For example, a fast-growing assortment of men and women around the world are using the InterNet (started by the U.S. military for information transfer-and-exchange that would never be interfered with) to draw attention to a questionable military project in Alaska. Now these InterNetting, e-mailing, faxing folks are blowing holes in the Department of Defense secrecy wall, by using the government's own system.

The printed-word part of the protest started when Dennis Specht, an anti-nuclear activist then living in Alaska, sent a news item to Nexus on the topic of HAARP --- the High frequency Active Auroral Research Program. Then an Alaskan political activist and science researcher in Anchorage, Nick Begich, networked with Patrick and Gael Crystal Flanagan, who are self-described TechnoMonks living in Sedona, Arizona, and was told to check out that same Australian-based magazine. Begich was surprised to see an item from his hometown in Nexus, and immediately headed to the local library to dig out the documents cited in the article.

That research led to articles and the book, *Angels Don't Play this HAARP: Advances in Tesla Technology*, which is 230 pages of detailed information on this intrusive project. This article will only give highlights. Despite the amount of research (350 footnotes), at its heart it is a story about ordinary people who took on an extraordinary challenge.

HAARP Boils The Upper Atmosphere

HAARP will zap the upper atmosphere with a focused and steerable electromagnetic beam. It is an advanced model of an "ionospheric heater". (The ionosphere is the electrically-charged sphere surrounding Earth's upper atmosphere. It ranges between about 40- to 600 miles above Earth's surface.)

Put simply, the apparatus for HAARP is a reversal of a radio telescope; antennas send out signals instead of receiving. HAARP is the test run for a super-powerful radiowave-beaming technology that lifts areas of the ionosphere by focusing a beam and heating those areas. Electromagnetic waves then bounce back onto earth and penetrate everything -- living and dead.

HAARP publicity gives the impression that the High-frequency Active Auroral Research Program is mainly an academic project with the goal of changing the ionosphere to improve communications for our own good. However, other U.S. military documents put it more clearly -- HAARP aims to learn how to "exploit the ionosphere for Department of Defense purposes". Communicating with submarines is only one of those purposes.

Press releases and other information from the military on HAARP continually downplay what it could do. Publicity documents insist that the HAARP project is no different than other ionospheric heaters operating safely throughout the world in places such as Arecibo, Puerto Rico; Tromso, Norway and the former Soviet Union. However, a 1990 government document indicates that the radio-frequency (RF) power zap will drive the ionosphere to unnatural activities.

"...at the highest HF powers available in the West, the instabilities commonly studied are approaching their maximum RF energy dissipative capability, beyond which the plasma processes will 'runaway' until the next limiting factor is reached."

If the military, in cooperation with the University of Alaska Fairbanks, can show that this new ground-based "Star Wars" technology is sound, they both win. The military has a relatively-inexpensive defense shield and the University can brag about the most dramatic geophysical manipulation since atmospheric explosions of nuclear bombs. After successful testing, they would have the military megaprojects of the future and huge markets for Alaska's North Slope natural gas.

Looking at the other patents which built on the work of a Texas' physicist named Bernard Eastlund, it becomes clearer how the military

intends to use the HAARP transmitter. It also makes governmental denials less believable. The military knows how it intends to use this technology, and has made it clear in their documents. The military has deliberately misled the public, through sophisticated word games, deceit and outright disinformation.

The military says the HAARP system could:

- give the military a tool to replace the electromagnetic pulse effect of atmospheric thermonuclear devices (still considered a viable option by the military through at least 1986).
- replace the huge Extremely Low Frequency (ELF) submarine communication system operating in Michigan and Wisconsin with a new and more compact technology.
- Be used to replace the over-the-horizon radar system that was once planned for the current location of HAARP, with a more flexible and accurate system.
- provide a way to wipe out communications over an extremely large area, while keeping the military's own communications systems working.
- provide a wide area earth-penetrating tomography which, if combined with the computing abilities of EMASS and Cray computers, would make it possible to verify many parts of nuclear nonproliferation and peace agreements.
- be a tool for geophysical probing to find oil, gas and mineral deposits over a large area.
- be used to detect incoming low-level planes and cruise missiles, making other technologies obsolete.

The above abilities seem like a good idea to all who believe in sound national defense, and to those concerned about cost-cutting. However, the possible uses which the HAARP records do not explain, and which can only be found in Air Force, Army, Navy and other federal agency records, are alarming. Moreover, effects from the reckless use of these power levels in our natural shield - the ionosphere - could be cataclysmic according to some scientists.

Two Alaskans put it bluntly. A founder of the NO HAARP movement, Clare Zickuhr, says "The military is going to give the ionosphere a big kick and see what happens."

The military failed to tell the public that they do not know what exactly will happen, but a Penn State science article brags about that uncertainty. Macho science? The HAARP project uses the largest energy levels yet played with by what Begich and Manning call "the big boys with their new toys". It is an experiment on the sky, and experiments are done to find out something not already known. Independent scientists told Begich and Manning that a HAARP-type "skybuster" with its unforeseen effects could be an act of global vandalism.

HAARP History



The patents described below were the package of ideas which were originally controlled by ARCO Power Technologies Incorporated (APTI), a subsidiary of Atlantic Richfield Company, one of the biggest oil companies in the world. APTI was the contractor that built the HAARP facility. ARCO sold this subsidiary, the patents and the second phase construction contract to E-Systems in June 1994.

E-Systems is one of the biggest intelligence contractors in the world -- doing work for the CIA, defense intelligence organizations and others. \$1.8 billion of their annual sales are to these organizations, with \$800

million for black projects -- projects so secret that even the United States Congress isn't told how the money is being spent.

E-Systems was bought out by Raytheon, which is one of the largest defense contractors in the world. In 1994 Raytheon was listed as number forty-two on the Fortune 500 list of companies. Raytheon has thousands of patents, some of which will be valuable in the HAARP project. The twelve patents below are the backbone of the HAARP project, and are now buried among the thousands of others held in the name of Raytheon.

Bernard J. Eastlund's U.S. Patent # 4,686,605 , "Method and Apparatus for Altering a Region in the Earth's Atmosphere, Ionosphere, and/or Magnetosphere" was sealed for a year under a government Secrecy Order.

The Eastlund ionospheric heater was different; the radio frequency (RF) radiation was concentrated and focused to a point in the ionosphere. This difference throws an unprecedented amount of energy into the ionosphere. The Eastlund device would allow a concentration of one watt per cubic centimeter, compared to others only able to deliver about one millionth of one watt.

This huge difference could lift and change the ionosphere in the ways necessary to create futuristic effects described in the patent. According to the patent, the work of Nikola Tesla in the early 1900's formed the basis of the research.

What would this technology be worth to ARCO, the owner of the patents? They could make enormous profits by beaming electrical power from a powerhouse in the gas fields to the consumer without wires.

For a time, HAARP researchers could not prove that this was one of the intended uses for HAARP. In April, 1995, however, Begich found other patents, connected with a "key personnel" list for APTI. Some of these new APTI patents were indeed a wireless system for sending electrical power.

Eastlund's patent said the technology can confuse or completely disrupt airplanes' and missiles' sophisticated guidance systems. Further, this ability to spray large areas of Earth with electromagnetic waves of varying frequencies, and to control changes in those waves, makes it possible to knock out communications on land or sea as well as in the air. The patent said:

"Thus, this invention provides the ability to put unprecedented amounts of power in the Earth's atmosphere at strategic locations and to maintain the power injection level, particularly if random pulsing is employed, in a manner far more precise and better controlled than heretofore accomplished by the prior art, particularly by detonation of nuclear devices of various yields at various altitudes..."

'..it is possible not only to interfere with third party communications but to take advantage of one or more such beams to carry out a communications network even though the rest of the world's communications are disrupted. Put another way, what is used to disrupt another's communications can be employed by one knowledgeable of this invention as a communication network at the same time."

..'.. large regions of the atmosphere could be lifted to an unexpectedly high altitude so that missiles encounter unexpected and unplanned drag forces with resultant destruction ...

" Weather modification is possible by, for example, altering upper atmosphere wind patterns by constructing one or more plumes of atmospheric particles which will act as a lens or focusing device. ... molecular modifications of the atmosphere can take place so that positive environmental effects can be achieved. Besides actually changing the molecular composition of an atmospheric region, a particular molecule or molecules can be chosen for increased presence. For example, ozone, nitrogen, etc., concentrations in the atmosphere could be artificially increased..."

Begich found eleven other APTI patents. They told how to make Nuclear-sized Explosions without Radiation", power-beaming systems, over-the-horizon radar, detection systems for missiles carrying nuclear

warheads, electromagnetic pulses previously produced by thermonuclear weapons and other Star-Wars tricks. This cluster of patents underlay the HAARP weapon system.

Related research by Begich and Manning uncovered bizarre schemes. For example, Air Force documents revealed that a system had been developed for manipulating and disrupting human mental processes through pulsed radio-frequency radiation (the stuff of HAARP) over large geographical areas. The most telling material about this technology came from writings of Zbigniew Brzezinski (former National Security Advisory to U.S. President Carter) and J.F. MacDonald (science advisor to U.S. President Johnson and a professor of Geophysics at UCLA), as they wrote about use of power-beaming transmitters for geophysical and environmental warfare. The documents showed how these effects might be caused, and the negative effects on human health and thinking.

The mental-disruption possibilities for HAARP are the most disturbing. More than 40 pages of the book, with dozens of footnotes, chronicle the work of Harvard professors, military planners and scientists as they plan and test this use of the electromagnetic technology. For example, one of the papers describing this use was from the International Red Cross in Geneva. It even gave the frequency ranges where these effects could occur -- the same ranges which HAARP is capable of broadcasting.

The following statement was made more than twenty-five years ago, in a book by Brzezinski which he wrote while a professor at Columbia University:

"Political strategists are tempted to exploit research on the brain and human behavior. Geophysicist Gordon J. F. MacDonald -- specialist in problems of warfare -- says accurately-timed, artificially-excited electronic strokes 'could lead to a pattern of oscillations that produce relatively high power levels over certain regions of the earth...In this way, one could develop a system that would seriously impair the brain performance of very large populations in selected regions over an extended period'...No matter how deeply disturbing the thought of

using the environment to manipulate behavior for national advantages , to some, the technology permitting such use will very probably develop within the next few decades."

In 1966, MacDonald was a member of the President's Science Advisory Committee and later a member of the President's Council on Environmental Quality. He published papers on the use of environmental control technologies for military purposes. The most profound comment he made as a geophysicist was, "The key to geophysical warfare is the identification of environmental instabilities to which the addition of a small amount of energy would release vastly greater amounts of energy." While yesterday's geophysicists predicted today's advances, are HAARP program managers delivering on the vision?

The geophysicists recognized that adding energy to the environmental soup could have large effects. However, humankind has already added substantial amounts of electromagnetic energy into our environment without understanding what might constitute critical mass. The book by Begich and Manning raises questions: Have these additions been without effect, or is there a cumulative amount beyond which irreparable damage can be done? Is HAARP another step in a journey from which we cannot turn back? Are we about to embark on another energy experiment which unleashes another set of demons from Pandora's box?

As early as 1970, Zbigniew Brzezinski predicted a "more controlled and directed society" would gradually appear, linked to technology. This society would be dominated by an elite group which impresses voters by allegedly superior scientific know-how. Angels Don't Play This HAARP further quotes Brzezinski:

"Unhindered by the restraints of traditional liberal values, this elite would not hesitate to achieve its political ends by using the latest modern techniques for influencing public behavior and keeping society under close surveillance and control. Technical and scientific

momentum would then feed on the situation it exploits", Brzezinski predicted.

His forecasts proved accurate. Today, a number of new tools for the "elite" are emerging, and the temptation to use them increases steadily. The policies to permit the tools to be used are already in place. How could the United States be changed, bit by bit, into the predicted highly-controlled technosociety? Among the "steppingstones" Brzezinski expected were persisting social crises and use of the mass media to gain the public's confidence.

In another document prepared by the government, the U.S. Air Force claims:

"The potential applications of artificial electromagnetic fields are wide-ranging and can be used in many military or quasi-military situations...Some of these potential uses include dealing with terrorist groups, crowd control, controlling breaches of security at military installations, and antipersonnel techniques in tactical warfare. In all of these cases the EM (electromagnetic) systems would be used to produce mild to severe physiological disruption or perceptual distortion or disorientation. In addition, the ability of individuals to function could be degraded to such a point that they would be combat ineffective. Another advantage of electromagnetic systems is that they can provide coverage over large areas with a single system. They are silent and countermeasures to them may be difficult to develop... One last area where electromagnetic radiation may prove of some value is in enhancing abilities of individuals for anomalous phenomena."

Do these comments point to uses already somewhat developed? The author of the government report refers to an earlier Air Force document about the uses of radiofrequency radiation in combat situations. (Here Begich and Manning note that HAARP is the most versatile and the largest radio-frequency-radiation transmitter in the world.)

The United States Congressional record deals with the use of HAARP for penetrating the earth with signals bounced off of the ionosphere. These signals are used to look inside the planet to a depth of many

kilometers in order to locate underground munitions, minerals and tunnels. The U.S. Senate set aside \$15 million dollars in 1996 to develop this ability alone -- earth-penetrating-tomography. The problem is that the frequency needed for earth-penetrating radiations is within the frequency range most cited for disruption of human mental functions. It may also have profound effects on migration patterns of fish and wild animals which rely on an undisturbed energy field to find their routes.

As if electromagnetic pulses in the sky and mental disruption were not enough, Eastlund bragged that the super-powerful ionospheric heater could control weather. Begich and Manning brought to light government documents indicating that the military has weather-control technology. When HAARP is eventually built to its full power level, it could create weather effects over entire hemispheres. If one government experiments with the world's weather patterns, what is done in one place will impact everyone else on the planet. Angels Don't Play This HAARP explains a principle behind some of Nikola Tesla's inventions -- resonance -- which affects planetary systems.

Bubble Of Electric Particles

Angels Don't Play This HAARP includes interviews with independent scientists such as Elizabeth Rauscher. She has a Ph.D., a long and impressive career in high-energy physics, and has been published in prestigious science journals and books. Rauscher commented on HAARP. "You're pumping tremendous energy into an extremely delicate molecular configuration that comprises these multi-layers we call the ionosphere." The ionosphere is prone to catalytic reactions, she explained; if a small part is changed, a major change in the ionosphere can happen.

In describing the ionosphere as a delicately balanced system, Dr. Rauscher shared her mental picture of it -- a soap-bubble-like sphere surrounding Earth's atmosphere, with movements swirling over the surface of the bubble. If a big enough hole is punched through it, she predicts, it could pop.

Slicing The Ionosphere

Physicist Daniel Winter, Ph. D. , of Waynesville, North Carolina, says HAARP high-frequency emissions can couple with longwave (low-frequency, or ELF) pulses the Earth grid uses to distribute information as vibrations to synchronize dances of life in the biosphere. Dan terms this geomagnetic action 'Earth's information bloodstream'., and says it is likely that coupling of HAARP HF (high-frequency) with natural ELF (extremely low frequency) can cause unplanned, unsuspected side effects.

David Yarrow of Albany, New York, is a researcher with a background in electronics. He described possible interactions of HAARP radiations with the ionosphere and Earth's magnetic grid:

"HAARP will not burn 'holes' in the ionosphere. That is a dangerous understatement of what HAARP's giant gigawatt beam will do. Earth is spinning relative to thin electric shells of the multilayer membrane of 'ion-o-spheres' that absorb and shield Earth's surface from intense solar radiation, including charged particle storms in solar winds erupting from the sun. Earth's axial spin means that HAARP -- in a burst lasting more than a few minutes -- will slice through the ionosphere like a microwave knife. This produces not a 'hole', but a long tear -- an incision."

Crudely Plucking The Strings

"Second concept: As Earth rotates, HAARP will slice across geomagnetic flux...a donut-shaped spool of magnetic strings -- like longitude meridians (on maps). HAARP may not 'cut' these strings in Gaia's magnetic mantle, but will pulse each thread with harsh, out-of-harmony high frequencies. These noisy impulses will vibrate geomagnetic flux lines, sending vibrations all through the geomagnetic web."

"The image comes to mind of a spider on its web. An insect lands, and the web's vibrations alert the spider to possible prey. HAARP will be a man-made microwave finger poking at the web, sending out confusing signals, if not tearing holes in the threads."

"Effects of this interference with symphonies of Gaia's geomagnetic harp are unknown, and I suspect barely thought of. Even if thought of, the intent (of HAARP) is to learn to exploit any effects, not to play in tune to global symphonies."

Among other researchers quoted is Paul Schaefer of Kansas City. His degree is in electrical engineering and he spent four years building nuclear weapons. "But most of the theories that we have been taught by scientists to believe in seem to be falling apart," he says.

He talks about imbalances already caused by the industrial and atomic age, especially by radiation of large numbers of tiny, high-velocity particles "like very small spinning tops into our environment. The unnatural level of motion of highly-energetic particles in the atmosphere and in radiation belts surrounding Earth is the villain in the weather disruptions, according to this model, which describes an Earth discharging its buildup of heat, relieving stress and regaining a balanced condition through earthquakes and volcanic action.

'Feverish' Earth

"One might compare the abnormal energetic state of the Earth and its atmosphere to a car battery which has become overcharged with the normal flow of energy jammed up, resulting in hot spots, electrical arcing, physical cracks and general turbulence as the pent-up energy tries to find some place to go."

In a second analogy, Schaefer says "Unless we desire the death of our planet, we must end the production of unstable particles which are generating the earth's fever. A first priority to prevent this disaster would be to shut down all nuclear power plants and end the testing of atomic weapons, electronic warfare and 'Star Wars'."

Meanwhile, the military builds its biggest ionospheric heater yet, to deliberately create more instabilities in a huge plasma layer -- the ionosphere -- and to rev up the energy level of charged particles.

Electronic Rain From The Sky

They have published papers about electron precipitation from the magnetosphere (the outer belts of charged particles which stream toward Earth's magnetic poles) caused by man-made very low frequency electromagnetic waves. "These precipitated particles can produce secondary ionization, emit X-rays, and cause significant perturbation in the lower ionosphere."

Two Stanford University radio scientists offer evidence of what technology can do to affect the sky by making waves on earth; they showed that very low frequency radio waves can vibrate the magnetosphere and cause high-energy particles to cascade into Earth's atmosphere. By turning the signal on or off, they could stop the flow of energetic particles.

Weather Control

Avalanches of energy dislodged by such radio waves could hit us hard. Their work suggests that technicians could control global weather by sending relatively small 'signals' into the Van Allen belts (radiation belts around Earth). Thus Tesla's resonance effects can control enormous energies by tiny triggering signals.

The Begich/ Manning book asks whether that knowledge will be used by war-oriented or biosphere-oriented scientists.

The military has had about twenty years to work on weather warfare methods, which it euphemistically calls weather modification. For example, rainmaking technology was taken for a few test rides in Vietnam. The U.S. Department of Defense sampled lightning and hurricane manipulation studies in Project Skyfire and Project Stormfury. And they looked at some complicated technologies that would give big effects. Angels Don't Play This HAARP cites an expert who says the military studied both lasers and chemicals which they figured could damage the ozone layer over an enemy. Looking at ways to cause earthquakes, as well as to detect them, was part of the project named Prime Argus, decades ago. The money for that came

from the Defense Advanced Research Projects Agency (DARPA, now under the acronym ARPA.)

In 1994 the Air Force revealed its Spacecast 2020 master plan which includes weather control. Scientists have experimented with weather control since the 1940's, but Spacecast 2020 noted that "using environmental modification techniques to destroy, damage or injure another state are prohibited". Having said that, the Air Force claimed that advances in technology "compels a reexamination of this sensitive and potentially risky topic."

40 Years Of Zapping The Sky?

As far back as 1958, the chief White House advisor on weather modification, Captain Howard T. Orville, said the U.S. defense department was studying "ways to manipulate the charges of the earth and sky and so affect the weather" by using an electronic beam to ionize or de-ionize the atmosphere over a given area.

In 1966, Professor Gordon J. F. MacDonald was associate director of the Institute of Geophysics and Planetary Physics at the University of California, Los Angeles, was a member of the President's Science Advisory Committee, and later a member of the President's Council on Environmental Quality. He published papers on the use of environmental-control technologies for military purposes. MacDonald made a revealing comment:

"The key to geophysical warfare is the identification of environmental instabilities to which the addition of a small amount of energy would release vastly greater amounts of energy."

World-recognized scientist MacDonald had a number of ideas for using the environment as a weapon system and he contributed to what was, at the time, the dream of a futurist. When he wrote his chapter, "How To Wreck The Environment", for the book *Unless Peace Comes*, he was not kidding around. In it he describes the use of weather manipulation, climate modification, polar ice cap melting or destabilization, ozone depletion techniques, earthquake engineering,

ocean wave control and brain wave manipulation using the planet's energy fields. He also said that these types of weapons would be developed and, when used, would be virtually undetectable by their victims. Is HAARP that weapon? The military's intention to do environmental engineering is well documented.

U.S. Congress' subcommittee hearings on Oceans and International Environment looked into military weather and climate modification conducted in the early 1970's. "What emerged was an awesome picture of far-ranging research and experimentation by the Department of Defense into ways environmental tampering could be used as a weapon," said another author cited in *Angels Don't Play This HAARP*.

The revealed secrets surprised legislators. Would an inquiry into the state of the art of electromagnetic manipulation surprise lawmakers today? They may find out that technologies developed out of the HAARP experiments in Alaska could deliver on Gordon MacDonald's vision, because leading-edge scientists are describing global weather as not only air pressure and thermal systems, but also as an electrical system.

'Small Input, Big Effect'

HAARP zaps the ionosphere where it is relatively unstable. A point to remember is that the ionosphere is an active electrical shield protecting the planet from the constant bombardment of high-energy particles from space. This conducting plasma, along with Earth's magnetic field, traps the electrical plasma of space and holds it back from going directly to the earth's surface, says Charles Yost of Dynamic Systems, Leicester, North Carolina.

"If the ionosphere is greatly disturbed, the atmosphere below is subsequently disturbed."

Another scientist interviewed said there is a super-powerful electrical connection between the ionosphere and the part of the atmosphere where our weather comes onstage, the lower atmosphere.

One man-made electrical effect - power line harmonic resonance - causes fallout of charged particles from the Van Allen (radiation) belts, and the falling ions cause ice crystals (which precipitate rain clouds).

What about HAARP? Energy blasted upward from an ionospheric heater is not much compared to the total in the ionosphere, but HAARP documents admit that thousandfold-greater amounts of energy can be released in the ionosphere than injected. As with MacDonald's "key to geophysical warfare", "nonlinear" effects (described in the literature about the ionospheric heater) mean small input and large output. Astrophysicist Adam Trombly told Manning that an acupuncture model is one way to look at the possible effect of multi-gigawatt pulsing of the ionosphere. If HAARP hits certain points, those parts of the ionosphere could react in surprising ways.

Smaller ionospheric heaters such as the one at Arecibo are underneath relatively placid regions of the ionosphere, compared to the dynamic movements nearer Earth's magnetic poles. That adds another uncertainty to HAARP - the unpredictable and lively upper atmosphere near the North Pole.

HAARP experimenters do not impress common sense Alaskans such as Barbara Zickuhr, who says "They're like boys playing with a sharp stick, finding a sleeping bear and poking it in the butt to see what's going to happen."

Could They Short-Circuit Earth?

Earth as a spherical electrical system is a fairly well-accepted model. However, those experimenters who want to make unnatural power connections between parts of this system might not be thinking of possible consequences. Electrical motors and generators can be caused to wobble when their circuits are affected. Could human activities cause a significant change in a planet's electrical circuit or electrical field? A paper in the respected journal *Science* deals with manmade ionization from radioactive material, but perhaps it could also be studied with HAARP-type skybusters in mind:

"For example, while changes in the earth's electric field resulting from a solar flare modulating conductivity may have only a barely detectable effect on meteorology, the situation may be different in regard to electric field changes caused by manmade ionization..."

Meteorology, of course, is the study of the atmosphere and weather. Ionization is what happens when a higher level of power is zapped into atoms and knocks electrons off the atoms. The resulting charged particles are the stuff of HAARP. "One look at the weather should tell us that we are on the wrong path," says Paul Schaefer, commenting on HAARP-type technologies.

Angels Don't Play This HAARP: Advances in Tesla Technology is about the military's plan to manipulate that which belongs to the world - the ionosphere. The arrogance of the United States government in this is not without precedent. Atmospheric nuclear tests had similar goals. More recently, China and France put their people's money to destructive use in underground nuclear tests. It was

Ground-Based 'Star Wars'

Prepared by Dr. Nick Begich of Anchorage,

"The earth is delicately balanced, and seeks to restore balance when disturbed. No one really knows how ionospheric experiments will affect that balance, or what the earth will do in response to try to restore balance."

These words are from Rosalie Bertell, Ph.D., of Toronto, Canada, founder of the International Institute of Concern for Public Health. Dr. Bertell was commenting on a U. S. military experiment named HAARP (High Frequency Active Auroral Research Program). HAARP may be the test run for a ground-based 'Star Wars' defense system. Military documents say it is intended to disrupt portions of the ionosphere (electrically active layer above the upper atmosphere) by heating it with powerful pulsed radio frequency beams. Radiation that bounces back to the surface of the planet would be in the longwave ELF (extremely low frequency) range.

Intended to be the most powerful ionospheric heater ever built, HAARP's ground-based apparatus - an array of 48 antennae each powered by its own transmitter - sits in the remote Alaskan wilderness northeast of the city of Anchorage. HAARP is much more than the auroral (Northern Lights) and radio-communications research project as is claimed by researchers at the University of Alaska's Geophysical Institute and their financial backers - the U.S. Navy and U.S. Air Force. Any weapons system in its early stages can be easily disguised as "pure" research. The fact is however, that HAARP is a military experiment aimed at invasively manipulating the ionosphere by beaming high energy upward from the ground. Such activity could potentially disrupt natural systems on the earth and high above it.

Individual members of the European Parliament are among the growing number of people worldwide who have been startled to hear about HAARP. Voices expressing various levels of concern are being

heard in many countries. For example, in contrast with the cautiously-worded comment of Dr. Bertell, a Germany-based researcher in the field of quantum electrodynamics, Al Zielinski, paints an apocalyptic word-picture. (He says HAARP technology could trigger a disaster with a global impact - electromagnetic waves causing destruction "when interacting with protective layers of the earth and its gravitational field".)

The ionosphere seems very far away, but even when undisturbed by humans it affects our everyday lives. For example, radio broadcasts are bounced off this electrically charged layer which lies between forty and six hundred miles above the surface of the earth, just above the ozone layer. The ionosphere is alive with electrical activity, so much so that its processes are "non-linear". This means that the ionosphere is dynamic, and its reactions to experiments are unpredictable.

The concept of non-linear is important in understanding the concerns of independent scientists who are knowledgeable about advanced physics and who warn against brash high-energy experiments on the ionosphere. Non-linear processes can change suddenly and unexpectedly, or they can increase in power dramatically. Some theorists such as Zielinski say that a non-linear process can under certain conditions tap into the background energy of space, which is also called "zero-point fluctuations of the vacuum".

Studying radio communications by using a tool as powerful as HAARP is a worthy scientific task in the opinion of the authors, but some independent researchers question whether the means justifies the end. Is it wise to poke holes in Earth's electrical umbrella? Is it wise to prod a dynamic natural system without knowing how it might react?

HAARP-Type Technology Could Perform A Variety Of Tricks

HAARP is intended to heat and lift a portion of the ionosphere above a selected location or locations on the planet in order to make a huge invisible "mirror" for bouncing electromagnetic radiation back to the surface of Earth. Why? The answer is that the U.S. military wants to:

- communicate with its submerged submarines by penetrating the oceans with ELF (Extremely Low Frequency) radiations.
- penetrate the land with ELF in order to search for hidden tunnels or other sites of military interest (a process known as earth-penetrating tomography).

What else could a HAARP-type project do in the near future? If the technology is scaled up in size, it could:

- Shield a territory from intercontinental ballistic missiles
- Fry satellites
- Discriminate between incoming objects (missiles)
- Enhance communications
- Disrupt communications over a large area of the globe
- Change the chemical structure of the upper atmosphere and possibly alter the weather
- Affect human mental functioning
- Impact the health of humans and other biological systems.

Ionospheric heaters as a class of research instruments are nothing new; they have operated in Puerto Rico, the former Soviet Union and Tromsø, Norway (operated by Max Planck Institut für Aeronomie) as well as at another site in Alaska. But what is being tested in the Alaskan wilderness since 1994 is new -- a tool that can focus and steer the radio frequency energy upward. This makes it capable of hitting the ionosphere with a far greater impact than possible from the previous design of heaters.

As HAARP's focused radio-frequency beams heat and boil targeted locations of the ionosphere, Earth's electrical system will be injected with a further excess of high-energy particles. What happens when a saturated system is infused repeatedly with too much energy? This question has been raised by independent physicists.

Each experiment with the HAARP is a test run for what can later be a powerful multi-purpose tool for the United States military. When completely built, the tool will beam an immense amount of focused

radio-frequency energy upward, heating and therefore lifting a part of the ionosphere. To picture how HAARP works, imagine a radio telescope in reverse; antennas that send out signals instead of receiving them. Then imagine an array of the most powerful of such instruments, working together to focus a beam upward.

How can a lay person understand what such a tool could do? Alaska state legislators are not necessarily trained in science, so in the spring of 1996 their State Affairs committee called in representatives of both sides of the HAARP controversy. (Following publication of the book *Angels Don't Play This HAARP*, many Alaskans became aware of the experiment in their backyard and asked their lawmakers to look at it.)

Alaska Lawmakers Hear Scientists' Concerns

One of the experts who testified at the State Affairs Committee hearing was Richard Williams of Princeton, New Jersey. He has a doctorate degree in physical chemistry from Harvard University and worked for 30 years as an industrial scientist in solid state electronics, electronics, structure of clouds, water evaporation and other environmental problems. Dr. Williams is an independent scientist; he's not dependent on funding from the military. This lends him a degree of independent judgment which compels us to quote him at length:

"I want to alert the legislature to an activity now going on in Alaska that, in addition to any local effect, might become a global threat to the atmosphere. That is HAARP. The initial experiment, as Mr.(project manager John) Hecksher said, will be done using modest power levels and are not a cause for concern. However, the project's internal documents indicate that plans include the eventual use of power levels up to ten billion watts. This is an enormous power level, more than 200 times the total electrical power level used by the city of Juneau. There could be a serious impact in the atmosphere that might result from energies of this magnitude. Effects might include drastic alteration of the thermal, refractive, scattering and emission character of the atmosphere over a wide range of the electromagnetic spectrum."

"Experiments at this power level would produce large changes in the concentration of charged particles in the ionosphere that would persist for some time and might even lead to permanent changes."

Dr. Williams told the committee that he is a supporter of the armed forces, but as a scientist he wanted to explain how "unintended consequences of innocent and beneficial human activities can cause serious changes on a global scale".

We introduced two examples of activities earlier this century which caused unintentional and serious changes in the atmosphere, with effects worldwide. The first example he cited was the growing concentration of carbon dioxide in the atmosphere. "What we don't know yet is how this will affect the delicate balance of life on earth."

The second unintended change that he cited is damage to the ozone layer, that shields us from harmful ultraviolet radiation. "In neither of these examples would an Environmental Impact Statement have identified the problem in time. Do we have any way to judge what (HAARP's) energy can do to the upper atmosphere?"

Excess Of Charged Particles, A Product Of HAARP

Perhaps, Dr. Williams offered, we do have an indicator: results of high-altitude nuclear explosions by the US and USSR during the Cold War. Intended to produce artificial radiation zones and possibly counteract a threat of intercontinental ballistic missiles, the explosions resulted in global interruptions of radio communications and profound disturbances of the upper atmosphere, including greatly increased concentrations of charged particles.

Following one of these tests, in July of 1962, James Van Allen used specially-instrumented satellites to monitor the electron population in the upper atmosphere. He reported a large initial increase in electron population, followed by a slow decrease, with significant disturbances still observable a year after the explosion.

"But this was just one injection of energy," Dr. Williams said. "To develop a military system, such as the one proposed by HAARP to communicate with submerged submarines, takes many tests, even if the system is never used in combat. For example, for test purposes over the years, the nuclear armed countries have exploded more than 2,000 nuclear weapons, mostly near the Earth's surface or under ground. A single massive injection of energy into the atmosphere violently disturbs its properties, and as Van Allen showed, the effect can last for a year or more."

"What would be the effect of repeatedly injecting high energy thousands of times? I believe the answer is that no one knows."

Those were changes of the atmosphere on a global scale, Dr. Williams noted. He pondered the possibility of additional, special, effects for polar regions, where the upper atmosphere has unique properties. Showers of charged particles coming from storms on the sun veer toward the poles, where they enter the atmosphere and produce the northern lights; some changes in the ozone layer have been most extreme over Antarctica and the far North. "Any future global changes in the atmosphere might well be noticed first in polar regions. Alaska may get the first warning of coming changes. And serve as the miner's canary for the rest of the world. If this happened, Alaska's state motto, 'North to the Future', would take on an unintended and ironic meaning."

"For any program that might damage the atmosphere on a global scale, we need to have full warning of the plans in advance, and informed public discussion, to justify the activity and identify all possible hazards."

Controversial Views

Dr. William Gordon (Ph.D. at Rice University, an electrical engineer specializing in radio communications) has worked on an ionospheric heater project and said there is "no convincing evidence" that exposure to low frequency electric or magnetic fields causes

monitorable health hazards. He said the U.S. Navy has sponsored a series of studies asking if their ELF transmitters in the states of Wisconsin and Michigan have caused harm.

"The results are not all in, but from the material I have looked at, operation of the ELF facility does not produce ecological effects..." While testifying at the legislative hearing he claimed that operation of very powerful transmitters have no adverse health effects.

Dr. Patrick Flanagan of Arizona disagrees. Dr. Flanagan also gave telephoned testimony. Since the proponents of HAARP focused attention on whether those questioning the project have prestigious academic backgrounds, Dr. Begich introduced Patrick Flanagan at length:

He has a doctorate in both medicine and physics and has experience in government weapons projects: he developed and sold a guided missile detector to the U.S. military when still a youth. Later he developed an electronic device for communication with the brain. Dr. Flanagan worked with a Pentagon think tank that was run by the former head of the Office of Scientific Research. He also developed speech encoding systems. He has worked for NASA, Tufts University, the Office of Naval Research, and at the Aberdeen Proving Grounds for the Department of Unconventional Weapons and Warfare.

The major portion of Dr. Flanagan's life work, however, has been on electromagnetic fields and their effects on living systems. In 1968 he turned his back on government-sponsored research, and since then has done independent research in his own laboratory.

Max Planck Institute Points To Health Effects

Possible effects of future HAARP fields on living systems is a concern that should be discussed, Dr. Flanagan told the committee. "One of the purposes of HAARP is to develop ELF (extremely low frequency) capability, for transmitting high-energy ELF waves, from .001 HZ all the way up to 40 Kilohertz, as described in (the military's) literature."

In the meantime, new research by other scientists shows that ELF signals may have profound effects on living organisms. Dr. Flanagan cited the example of known effects of ELF on the Circadian rhythms, which is the biological clock, of all living organisms including humans.

"The Max Planck Institute in Germany has done quite a bit of work on this, showing that very low energy levels - in fact, energy levels that are one tenth of the strength of the earth's magnetic field, can have profound effects on these rhythms... Mr. Hecksher and his colleagues may say that ELF fields from HAARP are not harmful, but remember -- our government once sprayed DDT (pesticide) on school children while they were eating lunch, and said this was not harmful..."

Dr. Flanagan in his brief testimony cited a study by a researcher at Catholic University which showed that coherent ELF fields, which is what HAARP will generate, can have an effect on DNA. For example they create abnormal development in chicken embryos and "possibly in humans".

In reply to denial by a military representative, Dr. Flanagan said there are thousands of papers written by reputable scientists on the negative effects of ELF fields on living systems. The Environmental Protection Agency released a report in 1991 linking electromagnetic fields to leukemia and brain cancer in children, for example. Flanagan continues, "we have a paper here that was just published in 1996 entitled Superimposing Spatially Coherent Electromagnetic Noise Inhibits Field-induced Abnormalities in Developing Chick Embryos. The paper shows that very low energy ELF fields develop abnormalities in developing chick embryos." (The fields could be counteracted by applying a white noise field.) "There is a tremendous amount of background literature on this. So ELF fields are not just harmless, as is being implied.... I don't think the question of electromagnetic safety has been entered at all."

No National Flags Waving In The Ionosphere



Mark Farmer, a journalist from Juneau, Alaska, also testified. Farmer prefaced his testimony by reminding the military representatives that he quotes statements from their own documents. Farmer's articles have been published in the prestigious defense magazine, *Janes Defense Weekly*, and in *Popular Science* magazine.

Farmer agreed that HAARP needs independent monitoring but he is not opposed to HAARP and appreciates the instrumentation. Particularly because it is currently only one-tenth of its eventual size "...the actual transmitter, as Mr. Hecksher says, is going to be a complex of incoherent scatter radars, some imaging devices. The super computer from UAF (University of Alaska, Fairbanks) is going to be tied in I imagine, for diagnostics. There's a spun liquid mercury mirror that's being put in. This is cutting-edge stuff and we in Alaska are lucky to have it, in some respects. I am generally in favor of the program, but the oversight (monitoring of the project) stinks."

"There is no supranational treaty that deals with the upper atmosphere or the ionosphere like there is for Antarctica or outer space," Farmer continued.

"I doubt if the power levels of HAARP are going to do anything really bad, but I don't know. Back in the 1950s and 1960s we blew up hydrogen bombs in the upper atmosphere... that delivered a lot more energy than HAARP can. But with (HAARP's) beam-steering, the pulsing capabilities, and maybe some instigation from secret organizations or counterproliferation groups within the U. S. government, there could be some bad effects."

"So there needs to be oversight other than the military." Farmer noted that Phillips laboratory, where HAARP's project manager is based, does basic research, as does the Office of Naval Research. But they also build secret weapons.

Most of Farmer's writing involves a covert testing base in Nevada called Area 51; he has spent much time in that area and in observing military secrecy tactics. He does not see HAARP itself as a secret project, but added that he does believe there are some secret initiatives. HAARP documents are unclassified "at least that I've been able to find. But there are classified documents dealing with 'Star Wars' (Strategic Defense Initiative) related projects such as using ionospheric heaters, back in the '1980s, which HAARP is actually a spinoff from."

HAARP technology could be used for beneficial purposes, Farmer said. However, if people outside the military lose interest in asking that HAARP's power levels and purposes be monitored by independent science councils, then the hidden world of defense corporations will probably step in. "The black programs will probably seep in from the side. And there will be secret initiatives."

Could Other Countries Build Powerful Zappers?

One of the legislators, Representative Green, asked if HAARP is opening a "Pandora's box" - other countries would soon have whatever technology is developed in HAARP. Could what begins in its simplistic form, safe and controllable, later be used as a weapon by increasing

the level of energy, and possibly detrimental effects, over selected areas?

Edward Kennedy, from Naval Research Laboratory in Washington, D.C., who is a technical interface between the contractor for HAARP (Raytheon Corporation) and the government, said that is difficult to answer. "We in the United States have no control over what other countries might do." However, he said, most other countries probably would not be able to finance building such a powerful instrument.



HAARP project manager John Hecksher told the committee that the ionospheric heater in Norway is comparable to HAARP: it has an antenna array very much like what HAARP will have. However, regarding HAARP's ability to create a narrow beam, Norway's instrument is two or three times less powerful than what HAARP will become.

Dr. Begich wanted the discussion to focus on the unique features of HAARP technology, not merely on power levels transmitted from the ground. The significant feature which distinguishes HAARP from other ionospheric heater projects operating around the world is the focusing capability of this particular design. The ability to focus radio-frequency energy into a narrow beam and to steer that beam gives it a powerful advantage in "perturbing the ionosphere".

Dr. Siun Akasofu, head of the University of Alaska's Geophysical Institute, argued that speaking about the focusing is misleading and that even if the radio-frequency beam is focused, "...the amount of energy going into the ionosphere is so little that you cannot see any

light coming from the ionosphere. One of most sensitive instruments in the world cannot see it. On the other hand, look at the aurora; you can see it with your naked eye." (We experienced Dr. Akasofu's statement as being strange, because the scientific literature on ionospheric heaters is full of references to "enhanced airglow" from the experiments.)

Dr. Begich and Dr. Flanagan asked the committee to look at the absence of independent biological scientists and people with backgrounds in electrophysiology, in the think tanks where HAARP-type experiments are hatched. People with those backgrounds are also concerned, he said, that using a tool for disturbing the ionosphere is not a decision that should be made only by the United States; it's a global issue.

Alaska may acquire a defense shield in the form of an advanced HAARP-type technology, Dr. Begich noted. "But it has to be reviewed from a biological standpoint, not just a mechanical standpoint."

Changing Statements About Power Levels

At the legislative hearing, HAARP employees focused on HAARP's current power levels, while the researchers on the other side of the controversy focused attention on the direction in which the power levels for the project are heading.

Has the military decided to downsize this current program they call HAARP because of public attention to it? At the legislative hearing, a representative of the military said the current developmental prototype of HAARP is capable of 3.6 kilowatts of radiated power. The full scale prototype will provide up to ten times that, or about 3,600 kilowatts, he said.

Dr. Patrick Flanagan noted that "the power levels described by Dr. Hecksher aren't consistent with a statement he made on a TV show (Sightings). When he was interviewed, (Dr. Hecksher) said the HAARP system can punch holes through the ionosphere and these holes would heal shortly after a HAARP system was turned off."

To punch a hole through the ionosphere would take more than the alleged 3,600 kilowatts, Dr. Flanagan indicated. He did mention, however, that there was another disturbing possibility: the "maser amplification of the HAARP energy. For example, if HAARP is applying 3,600 kilowatts to the ionosphere, there's a possibility of what is called maser amplification of that energy by charged particles in the ionosphere...the energy is powered by the energy from the sun. So that these charged particles in the ionosphere can be caused to mase... So that puts out more energy than HAARP is putting in."

What do the military planners have in mind? Technical Memorandum 195, an unpublished 613-page compilation concerning the HAARP Workshop on Ionospheric Heating Diagnostics, (held in 1991 at Hanscom Air Force Base, Massachusetts) includes this piece of information: the desired level of power for HAARP is 100 billion watts, vastly greater than what the military is now claiming as a goal. Other documents from the military were openly published and refer to power levels between one and ten gigawatts (billion watts).

Whatever the eventual power level it does not take much power bouncing back to the surface of the earth to affect living organisms. Dr. Nick Begich also told the State Affairs Committee about a substantial amount of science literature on the topic that has been published as recently as the early 1990s. The findings suggest that lower levels of energy (lower than previously believed) can affect human physiology. These studies are the most significant aspect of what has not been properly disclosed by those responsible for the HAARP project's safety, he testified. The project began when the debate over effects of ionizing and non-ionizing radiation was still in its infancy. Since then, many scientists have come to the conclusion that lower energy densities, when pulsed in the right frequency range, will have profound health effects.

Biohazards of Extremely Low Frequencies (ELF)

In reporting on the HAARP project the issue of extremely low frequency (ELF) impacts on human health has been raised. The debate on the impact of ELF is still ongoing in international medical circles. However, recent research points to the fact that these frequencies when shaped and transferred to humans cause significant reactions. In our book, *Angels Don't Play this HAARP: Advances in Tesla Technology*, we explore some of these reactions.

HAARP is not the only system available for taking advantage of these new technologies. The military has developed smaller weapon systems for use in battlefield applications. These new weapons were disclosed in documents authored and compiled by the United States Air Force. The Air Force documents indicate that these weapons can be used for mind control, inducing heart attacks, causing electronic failures and creating computer malfunctions. More recently these new weapons have been revealed in International Red Cross documents and in other press reports. In a CBS - 60 Minutes broadcast on February 11, 1996 a report on some of these new systems was shown. The program discussed some of the effects of these new weapons which included disorientation and "flu-like symptoms".

This new classification of weapons has created some level of concern on the part of military planners in trying to find a way to introduce these systems. The United States Army has developed a concept called the Revolution in Military Affairs (RMA) which begins to unfold the weapons introduction plan. What this document points out is that many of these weapons will operate in a way which is in conflict with American values. The Army realizes that the conflict with our values exists and openly discusses the problem it presents. The Army then goes on to describe a number of ways to reshape those values so that these new weapons can be used. The basic problem, from this writers perspective, is that the U. S. Army's role in the American scene is not intended to "shape and form public values", rather it is supposed to

"reflect" American values. The idea that any branch of government should see their role as one of setting the national ethic is wrong.

The United States military has taken advantage of the basic research which demonstrates the effects of various types of electromagnetic radiation. This research is being used for weapons development. These new technologies have been, in part, transferred to the United States Justice Department for use in domestic police actions. The technology transfers have been made over the last several years. Three conferences were held between 1985 and 1993 in order to gradually introduce the technologies. The last conference included discussions of pulsed radio frequency systems and was considered so sensitive that the entire meeting was classified by the Department of Defense and the program sponsor -- Los Alamos Laboratory. This last meeting has led to policy development which now permits technology transfers from the military to the United States Department of Justice.

There are a number of documented effects of these low levels of electromagnetic radiation. The effects can be positive or negative depending upon the intent of the operators. In Europe, and elsewhere, the use of these low levels of electromagnetic radiations are being applied to the development of very effective healing systems. In future articles we will be discussing the findings of researchers and clinicians who are using these new electromedical systems. Significant work has been done in nonsurgical applications for treating heart disease, cancer, diabetes and numerous other disorders. However, on the dark side of these technologies is the military. The Department of Defense uses the same basic information for developing weapons which attack health.

The use of these new weapons in altering and manipulating human brain functions is startling. In November, 1995, I asked Dr. Patrick Flanagan if there was a way to guard against low level radiations in the ELF range. These are the frequency ranges which can cause disruptions in the human brain. He considered the question and then

described the following equipment configuration for use in a home or work place:



Dr. Flanagan suggested that a circuit be constructed. The system he described would start with a "white noise" generator. (These are available from organizations like the Sharper Image.) The white noise generator speaker would be disconnected and the speaker's wire leads would be connected to the input side of a power amplifier. The output side of that power amplifier would then be connected to an insulated copper wire which would be looped once around the area which was to be protected against ELF. This circuit would provide protection for low power density ELF signals. The purpose of the system is to create a situation where the ELF signals cannot "lock" onto biological systems -- like human beings. The effectiveness of the system would be based upon its actual construction and the ELF power levels in the area. The components for construction can be readily obtained from electronic supply houses and can be built by people skilled in electronics to assure that the components sizes match correctly.

Star Wars, Star Trek and Killing Politely

Prepared by Dr. Nick Begich

Over the last several years Earthpulse has been investigating the latest developments in technology. We explore subjects related to improving the human condition and expose projects which we believe are risky and unnecessary. This essay is about some of the science being developed and contemplated by military planners and others which could profoundly effect our lives. The intent of this essay is to focus discussion on these new systems by bringing them into the light of day.

Is it possible to trigger earthquakes, volcanic eruptions or weather changes by man-made activities? Is it possible to create and direct balls of energy at lightning speeds, to destroy an enemy? Is it possible to manipulate the behavior, and even the memories, of people using specialized technologies? The United States military and others believe that this is the case. Many of these systems are well on their way to being used in the battlefield.

Zapping the Adversary

There are many new technologies being explored that will cause people to experience artificial memories, delusions and physical problems. These new technologies are being designed to minimize death (although death is possible) and to be virtually undetectable. Many of these new weapons are being called "non-lethal" in terms of their effect on people.

In a recent hearing in a Foreign Affairs Subcommittee of the European Parliament¹ the issue of these new technologies was discussed. I was one of those called to testify along with a number of other people. One of the most interesting speakers was from the International Red Cross in Geneva, Switzerland, who gave an excellent presentation on "non-lethals". One of the points which he made involved the definition of "non-lethal". Part of the definition involved the idea that such weapons

would result in a less than 25% kill factor for those exposed to them. He explained the fallacy in this by noting that land mines would even fit this definition because they did not kill over 25% of their victims. He explained that lasers which could permanently blind a person could also fit the definition. He also gave the example of "sticky foam" being used on an adversary and that this might not kill the person unless it landed on the victim's face and caused a slow and agonizing death by suffocation. The main point made was that non-lethals could indeed be lethal. Many of the panelists concluded that the term non-lethal was not accurate in describing these new systems and seemed more like a ploy to gain acceptance for the new technology.

Another relevant point made in the hearing was the frequency of use of these weapons in non-combat situations or policing actions. Comparisons between Bosnia and Northern Ireland were made. It was pointed out that in conflicts where rubber bullets and other non-lethal systems were available they tended to be used with greater frequency because the troops using them believed that they would not kill. Others in conflict situations using weapons clearly designed for killing used much greater restraint. As of the date of the hearing "peace keepers" armed with modern weapons had not fired a shot in Bosnia whereas in Northern Ireland there were often injuries and deaths from the use of "non-lethals".

One of the most revealing documents I have found regarding these new technologies was produced by the Scientific Advisory Board of the Air Force. The Air Force initiated a significant study to look forward into the next century and see what was possible for new weapons. In one of the volumes published as a result of the study, researchers, scientists and others were encouraged to put together forecasts of what might be possible in the next century. One of those forecasts shockingly revealed the following:

"One can envision the development of electromagnetic energy sources, the output of which can be pulsed, shaped, and focused, that can couple with the human body in a fashion that will allow one to prevent voluntary muscular movements, control emotions (and thus

actions), produce sleep, transmit suggestions, interfere with both short-term and long-term memory, produce an experience set, and delete an experience set."²

Think about this for a moment - a system which can manipulate emotions, control behavior, put you to sleep, create false memories and wipe old memories clean. Realizing this was a forecast and not necessarily the current state of technology should not cause one to believe that it is not a current issue. These systems are far from speculative. In fact, a great deal of work has already been done in this area with many systems being developed. The forecast went on to say:

"It would also appear possible to create high fidelity speech in the human body, raising the possibility of covert suggestion and psychological direction. When a high power microwave pulse in the gigahertz range strikes the human body, a very small temperature perturbation occurs. This is associated with a sudden expansion of the slightly heated tissue. This expansion is fast enough to produce an acoustic wave. If a pulse stream is used, it should be possible to create an internal acoustic field in the 5-15 kilohertz range, which is audible. Thus, it may be possible to "talk" to selected adversaries in a fashion that would be most disturbing to them."³

Is it possible to talk to a person remotely by projecting a voice into his head? The forecaster suggests that this would be "disturbing" to the victim - what an understatement, it would be pure terror. A weapon could intrude into the brain of an individual represents a gross invasion of his private life. The idea that these new systems could be created in the next several years should be cause for significant discussion and public debate.

From National Defense to the Justice Department

On July 21, 1994, Dr. Christopher Lamb, Director of Policy Planning, issued a draft Department of Defense directive which would establish a policy for non-lethal weapons. The policy was intended to take effect January 1, 1995, and formally connected the military's non-lethal research to civilian law enforcement agencies.

The government's plan to use pulsed electromagnetic and radio frequency systems as a nonlethal technology for domestic Justice Department use rings the alarm for some observers. Nevertheless, the plan for integrating these systems is moving forward. Coupling these uses with expanded military missions is even more disturbing. This combined mission raises additional constitutional questions for Americans regarding the power of the federal government.⁴

In interviews with members of the Defense Department the development of this policy was confirmed.⁵ In those February, 1995, discussions, it was discovered that these policies were internal to agencies and were not subject to any public review process.

In its draft form, the policy gives highest priority to development of those technologies most likely to get dual use, i.e. law enforcement and military applications. According to this document, non-lethal weapons are to be used on the government's domestic "adversaries". The definition of "adversary" has been significantly enlarged in the policy:

"The term 'adversary' is used above in its broadest sense, including those who are not declared enemies but who are engaged in activities we wish to stop. This policy does not preclude legally authorized domestic use of the nonlethal weapons by United States military forces in support of law enforcement."⁶

This allows use of the military in actions against the citizens of the country that they are supposed to protect. This policy statement begs the question; who are the enemies that are engaged in activities they wish to stop, what are those activities, and who will make the decisions to stop these activities?

An important aspect of non-lethal weapon systems is that the name non-lethal is intentionally misleading. The Policy adds, "It is important that the public understand that just as lethal weapons do not achieve perfect lethality, neither will 'non-lethal' weapons always be capable of precluding fatalities and undesired collateral damage".⁷ In other

words, you might still destroy property and kill people with the use of these new weapons.

In press statements, the government continues to downplay the risks associated with such systems, even though the lethal potential is described in context of their own usage policy. In Orwellian double speak, what is nonlethal can be lethal.

International Red Cross

Questions are not being raised just by the author of this article, they are being raised by the International Committee of the Red Cross. In their report from mid-1994,⁸ a number of points were raised.

The idea of "war without death" was not new but began in the 1950's, according to the report. The military interest in these systems dealt with chemical weapons, later advancing to radiation weapons. The report looked at the ramifications of international law regarding use of these new technologies. It pointed out weaknesses in the international conventions regarding the use of chemical weapons:

"Therefore, when the Convention (Chemical Weapons Convention) comes into force next year, activities involving them - activities such as development, production, stockpiling and use - will become illegal, unless their purpose is a purpose that is expressly not prohibited under the Convention. One such purpose is 'law enforcement including domestic riot control purposes'⁹ Unfortunately, the Convention does not define what it means by 'law enforcement' (whose law? what law? enforcement where? by whom?), though it does define what it means by 'riot control agent', namely 'any chemical...which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure'. States parties are enjoined 'not to use riot control agents as a method of warfare' ".¹⁰

In other words, we can use on our own citizens what we cannot use in warfare with real enemies who are threats to national security. This explains why the development of some types of non-lethals has moved out of the Department of Defense into the Department of Justice. For the Department of Defense to continue to work on some of

these weapons, as instruments of war, is now illegal under international law. The Red Cross report went on to discuss the shift from weapons of war to police tools which they called - "riot control agents".

What does this mean for Americans? This places Americans, and citizens of other countries, in a lesser protected class than individuals seeking to destroy our countries - our real adversaries. This language really represents a way for countries to continue to develop these weapons. This is a loop-hole in the agreement. So while the treaty looks good on the surface, it is hollow rhetoric underneath.

In another section of the report, "Future Weapons Using High Power Microwaves" are discussed at length. This section describes microwave frequencies developed for use in weapons against machines and people.

One of the uses described is an Electromagnetic Pulse (EMP) weapon which gives an operator the same ability to wipe out electronic circuits as a nuclear blast would provide. The main difference is that this new technology is controllable, and can be used without violating nuclear weapons treaties.

This section of the report then described energy levels needed for the following to occur:

- "Overheats and damages animal tissue."
- "Possibly affects nervous system."
- "Threshold for microwave hearing."
- "Causes bit errors in unshielded computers."
- "Burns out unprotected receiver diodes in antennas."

The effects are based on radio frequency radiation being pulsed "between 10 and 100 pulses per second". The report confirmed that non-thermal effects were being researched. These non-thermal effects included damage to human health when the effects occurred "within so-called modulation frequency windows (10 Hertz is one such window¹¹) or power density windows¹²".

The way these weapons work was clearly described when the report noted their effect on machines:

"A HPM (High Power Microwave) weapon employs a high power, rapidly pulsating microwave beam that penetrates electronic components. The pulsing action internally excites the components, rapidly generating intense heat which causes them to fuse or melt, thus destroying the circuit...HPM (weapons) attack at the speed of light thus making avoidance of the beam impossible, consequently negating the advantage of weapon systems such as high velocity tactical missiles."

In other words, with this kind of weapon there is no machine which could get by this invisible wall of directed energy.

Another report on non-lethal technologies, issued by the Council on Foreign Relations points out that, "The Nairobi Convention, to which the United States is a signatory, prohibits the broadcast of electronic signals into a sovereign state without its consent in peacetime."¹³

This report opens discussion of the use of these weapons against terrorists and drug traffickers.¹⁴ The CFR report recommends that this be done secretly so that the victims do not know where the attack is from, or if there even is an attack. There is a problem with this approach. The use of these weapons, even against these kinds of individuals, may be in violation of United States law in that it presumes guilt rather than innocence. In other words the police, CIA, DEA or other enforcement organization becomes the judge, jury and executioner.

Going to another document by a Captain Paul Tyler, we can look at the debate between classical theories and recent research. There is a gulf of conflict between these two schools of thought. The debate centers on the classical idea that only ionizing radiation (that which generates heat in tissue) can cause reactions in the body, while new research indicates that subtle, small, amounts of energy can cause reactions as well. What Tyler wrote in 1984, as an officer in the Air Force, puts the debate simply. He said,

"Even though the body is basically an electrochemical system, modern science has almost exclusively studied the chemical aspects of the body and to date has largely neglected the electrical aspects. However, over the past decade researchers have devised many mathematical models to approximate the internal fields in animals and humans. Some of the later models have shown general agreement with experimental measurements made with the phantom models and animals. Presently most scientists in the field use the concept of specific absorption rate for determining the Dosimetry (dosages) of electromagnetic radiation. Specific absorption rate is the intensity of the internal electric field or quantity of energy absorbed... However, the use of these classical concepts of electrodynamics does not explain some experimental results and clinical findings. For example, according to classical physics, the frequency of visible light would indicate that it is reflected or totally absorbed within the first few millimeters of tissue and thus no light should pass through significant amounts of tissue. But it does. Also, classical theory indicates that the body should be completely invisible to extremely low frequencies of light where a single wave length is thousands of miles long. However, visible light has been used in clinical medicine to transilluminate various body tissues."¹⁵

In other words, the classical theories are partially wrong in that they do not fully explain all of the reactions which are observed in the body. The Navy has abstracted over a thousand international professional papers by private and government scientists which explore these issues.

Tyler continues,

"A second area where classical theory fails to provide an adequate explanation for observed effects is in the clinical use of extremely low frequency (ELF) electromagnetic fields. Researchers have found that pulsed external magnetic fields at frequencies below 100 Hertz (pulses/cycles per second) will stimulate the healing of nonunion fractures, congenital pseudarthroses, and failed arthroses. The effects of these pulsed magnetic fields have been extremely impressive, and their use in orthopedic conditions has been approved by the Food and Drug Administration."¹⁶

Even the FDA, one of the most vigorous regulatory authorities in the country, accepts these non-thermal effects. Tyler adds,

"Recently, pulsed electromagnetic fields have been reported to induce cellular transcription (this has to do with the duplication or copying of information from DNA, a process important to life). At the other end of the non ionizing spectrum, research reports are also showing biological effects that are not predicted in classical theories. For example, Kremer and others have published several papers showing that low intensity millimeter waves produce biological effects. They have also shown that not only are the effects seen at very low power, but they are also frequency-specific."

Tyler goes on to discuss the results of this new thinking and the possible effects of these low energy radiations in terms of information transfer and storage, and their effects on the nervous system. Research has shown that very specific frequencies cause very specific reactions, and, once a critical threshold is passed, negative reactions occur.¹⁷

Institute for Non-Lethals

It has been fourteen years since Tyler's paper was delivered and the controversy began to take form. Now there is even more energy being pressed into the anchoring of the newest means of killing and maiming one another. "Imagine a world where land mines don't blow up but give off an eerie sound that makes intruders feel sick. Or a war where attackers don't use missiles to stop tanks but microwaves to shut down engines."¹⁸ The Institute for Non-Lethal Defense Technologies at Penn State College has been established in cooperation with the United States Marines. The institute was created to evaluate weapons created by organizations outside the military. The new institute will look at legal, ethical, political, environmental and physical effects of these new technologies.

Manipulating the Environment

There has been a good deal of speculation about the possibilities of creating artificial weather and of controlling the weather. This is not new and has been the subject of on-going military research for

decades. Moreover, in 1976 the United States signed international treaties calling for a ban on "geophysical warfare".

The use of new weapons is not limited to governments and sophisticated science laboratories. In April ,1997, the United States Secretary of Defense, William Cohen made the following comment:

"Others are engaging even in an eco-type of terrorism whereby they can alter climate, set off earthquakes, volcanoes remotely through the use of electromagnetic waves."¹⁹

This is not new either but has its roots in 1960-70's era research by American scientists and continues to appear in numerous articles and reports. The idea of creating artificial weather including cyclones is being explored. In a recent article in the Wall Street Journal it was reported that "a Malaysian company, BioCure Sdn. Bhd., will sign a memorandum of understanding soon with a government-owned Russian party to produce the Cyclone."²⁰ The deal with the Russians was set up so that if the technology did not work the Malaysians did not have to pay for the attempt. There have been other reports of Russian research into this area.

Nukes for the Bad Guys?

It was reported in the Jerusalem Post that Iran paid \$25 million for two tactical nuclear weapons smuggled out of the former Soviet Union in the early 1990's and that technicians from Argentina were involved in the secret operation.²¹ This was an interesting report because these kinds of weapons are relatively small. The U.S. government has been concerned about these kinds of weapons being launched at the country or one of our allies. While this is a concern, perhaps a bigger concern might be the fact that these small weapons could be smuggled into the country. Is this possible? Could this happen in the United States? Considering the fact that our government can not keep boatloads of drugs out I suggest that the landing of a small tactical weapon is not only possible but highly probable and that someone with the will to do so would be successful in his attempt.

Photon Torpedoes

What else might be on the way? In a 1989 patent a most interesting bit of science is revealed. The development of new energy weapons has occupied the imaginations and resources of our national and private laboratories. One such weapon idea is owned by the United States Department of Energy. It is a new kind of weapon which allows electromagnetic or acoustic energy to be focused into a tight package of energy which can be projected over great distances without dissipating. When scientists think of this energy being projected through the air it was always assumed that the energy would dissipate, dispersing at such a rapid rate that no weapon's effect could be realized. What has been discovered is that there is a way to create such a system. In a U. S. patent the following summary appears:

"The invention relates generally to transmission of pulses of energy, and more particularly to the propagation of localized pulses of electromagnetic or acoustic energy over long distances without divergence."²²

"As the Klingon battle cruiser attacks the Starship Enterprise, Captain Kirk commands "Fire photon torpedoes". Two darts or blobs of light speed toward their target to destroy the enemy spaceship. Stardate 1989, Star Trek reruns, or 3189, somewhere in intergalactic space. Fantasy or reality. The ability to launch localized packets of light or other energy which do not diverge as they travel great distances through space may incredibly be at hand."²³

The patent describes the energy effect as "electromagnetic missiles or bullets" which could destroy almost any object in their path.

Star Wars

Remember Star Wars? That weapon concept would move the theater of war to space. In 1995, the funding for Star Wars was widely reported as a dead issue when full funding was defeated by the United States Congress. Star Wars did not end. As many unpopular programs do - they just get new names.

"This year the Ballistic Missile Defense Organization (once called the Strategic Defense Initiative) got \$3.7 billion. That's up from \$2.8 billion in 1995, and is very near the peak level spent during the Cold War."²⁴

What is interesting is that - the billions spent on Star Wars systems, which these became known as, were only for "research" according to the military's mission statement. The technology is being advanced in the hope that a system might be developed early in the next century. The external threats are now being characterized as rogue states and terrorist organizations which might gain delivery technologies. While the threats are not imagined and need to be addressed, it is not responsible to create word games which end public debate and allow systems thought to be discontinued the latitude to proceed.

In another "offshoot of the Reagan administration's Strategic Defense Initiative" satellite-disabling lasers have been developed. A test, at less than full power, was performed at the end of 1997 to demonstrate the ability of the system to hit its target. The demonstration was a success and now many are concerned that this may provoke an arms race in space.²⁵ This is the same concern which was raised when this technology was first discussed in public forums. There was a good deal of objection and yet here we are two decades later delivering on the "impossible" technology.

One of the things which has always bothered me as a researcher is how the little guy is always held to a high standard of accountability while big organizations get away with murder. I am not suggesting that individuals should be held to a lesser standard - quite to the contrary. Organizations responsible for the security of the nation should be held to the highest standards. We must ask ourselves what these agencies are charged with protecting and whether their actions follow the values expressed in law. Are there reasons that the government should be excused from meeting the requirements of the law? Is there good cause for hiding behind laws which allow for the exploitation of other laws? An article appeared recently which illustrates the point, as follows:

"A former CIA officer from the agency's top secret 'black bag' unit that breaks into foreign embassies to steal code books was charged with espionage Friday for tipping off two countries about the CIA's success in compromising their communications."²⁶

Douglas Groat was fired in 1996 from the CIA's Science and Technology Directorate and could now face the death penalty. These super secret teams are sent around the world to break into embassies and other locations to steal codes and other information so that the National Security Agency (NSA) can intercept a country's classified communications and know their contents. The article concluded,

"The CIA has never publicly acknowledged the existence of its black-bag teams because their operations are by their nature illegal. And they not only target America's adversaries but embassies of friendly powers."²⁷

Consider the contents of this article from the perspective of one of our allies. Remember a few years ago the outrage of our government when we discovered that the State of Israel was using its intelligence gathering resources in the U.S. It was an outrage - or was it just the game we all play? Why should we expect anything less of our allies than we expect of ourselves?

Lost in the Illusion

In this essay I hoped to disclose some of the technology which is here now and advancing rapidly. More than this, I am hopeful that the information would be useful in assessing the state of technology from what appears in some of the open literature. What has happened in the United States which has allowed segments of our government to set agendas which run counter to the values most of us hold?

The transparency of government - the idea that we should be able to look into our government and see clearly the values of the population reflected there is an absolute expectation. Are there risks in transparent government? Yes, an open society necessitates that certain risks be taken.

As technology advances, the ability to control populations and manipulate outcomes also advances. Because we know how to control the weather, create earthquakes, force behavioral changes and manipulate the physiology of people does not mean that we should do it. The age we are in requires even greater safeguards of personal freedoms, not further constraints upon it. If freedom is what is being defended than freedom is what must be inherent in the actions our governments take in creating aspects of our reality.

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1. February 6, 1998, Brussels, Belgium, European Parliament's Foreign Affairs Subcommittee on Security and Disarmament.
 2. New World Vistas: Air and Space Power for the 21st Century - Ancillary Volume; Scientific Advisory Board (Air Force), Washington, D.C.; Document #19960618040; 1996; pages 89-90.
 3. Ibid.
 4. Department of Defense Directive, Policy for Non-Lethal Weapons, Office of the Assistant Secretary of Defense, Draft July 21, 1994.
 5. Interviews in late February by Nick Begich.
 6. Department of Defense Directive, Policy for Non-Lethal Weapons, Office of the Assistant Secretary of Defense, Draft July 21, 1994.
 7. Ibid.

8. "Expert Meeting on Certain Weapon Systems and on Implementation Mechanisms in International Law", Report of the International Committee of the Red Cross, Geneva, Switzerland, May 30 - June 1, 1994. Issued July 1994.
9. Chemical Weapons Convention, Article II.9(d).
10. "Expert Meeting on Certain Weapon Systems and on Implementation Mechanisms in International Law", Report of the International Committee of the Red Cross, Geneva, Switzerland, May 30 - June 1, 1994. Issued July 1994.
11. Discussion with Dr. Patrick Flanagan on August 2, 1995.
12. "Expert Meeting on Certain Weapon Systems and on Implementation Mechanisms in International Law", Report of the International Committee of the Red Cross, Geneva, Switzerland, May 30 - June 1, 1994. Issued July 1994.
13. "Non-Lethal Technologies; Military Options and Implications", Report of an Independent Task Force sponsored by the Council on Foreign Relations, Malcom H. Weiner, Chairman, released June 22, 1995.
14. Ibid.
15. Low-Intensity Conflict and Modern Technology, Lt Col. David J. Dean USAF, Editor, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986.
16. Ibid.
17. Low-Intensity Conflict and Modern Technology, Lt Col. David J. Dean USAF, Editor, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986.
18. Anchorage Daily News; "Future Weapons May Avert Deaths"; by Michael Raphael.
19. Office of the Assistant Secretary of Defense, Department of Defense News Briefing, Secretary of Defense William Cohen, April 28, 1997. Conference on Terrorism, Weapons of Mass Destruction, and U.S. Strategy at the Georgia Center, Mahler Auditorium, University of Georgia, Athens, Ga.
20. The Wall Street Journal; "Malaysia to Battle Smog With Cyclones"; by Chen May Yee; page A19, November 13, 1997.
21. Anchorage Daily News; "Report Says Iran Bought Nuclear Arms"; page A-8, April 11, 1998.
22. U.S. Patent #4,959,559; "Electromagnetic or Other Directed Energy Pulse Launcher"; Inventor: Richard W. Ziolkowski; Assigned to the United States of America as represented by the U.S. Department of Energy, Washington, D.C.
23. Ibid.
24. Investor's Business Daily; "Star Wars: Force Not with Us, US Remains Defenseless Against Missile Attack; August 25, 1997; page 1.
25. Anchorage Daily News; "Army Laser Zaps Satellite"; by Paul Richter (Los Angeles Times); October 21, 1997.
26. Anchorage Daily News; "Ex-CIA Officer Faces Charges of Espionage"; by James Risen (Los Angeles Times); page A-3, April 4, 1998.
27. Ibid.

Terrorists In The News

Prepared by William S. Cohen

Monday, April 28, 1997 - Cohen's keynote address at the Conference on Terrorism, Weapons of Mass Destruction, and U.S. Strategy at the Georgia Center, Mahler Auditorium, University of Georgia, Athens, Ga. The event is part of the Sam Nunn Policy Forum being hosted by the University of Georgia. Secretary Cohen is joined by Senator. Sam Nunn and Senator. Richard G. Lugar.

Secretary Cohen: Senator Nunn, thank you very much. As Senator Nunn has indicated, he and I have worked for many years together, along with Senator Lugar. The two of these gentlemen I feel are perhaps the most courageous and visionary to have served in the Senate. They were largely responsible, of course, for adopting the so-called Nunn/Lugar legislation.

I'll comment on that later during the course of the morning, but I've had occasion to meet with a number of Russian counterparts, and as we go through various translations of the communications that we're having, the two words they are able to articulate very clearly, they say 'Nunn/Lugar, Nunn/Lugar. So they know exactly what that means, and that means the Cooperative Threat Reduction Act that these two gentlemen were indispensable in shepherding through the United States Congress.

It was Nunn/Lugar I that dealt with the reduction of nuclear weapons between the United States and the Soviet Union in terms of trying to come to grips with how we helped the Russians dismantle hundreds of their nuclear weapons, and also helped them with their destruction of chemical weapons. But they, of course, have looked beyond simply that particular relationship, which is very important, but also looking to the future that we face as far as the rise of terrorism both international and domestic; and finding ways in which the Department of Defense can become involved in helping local states and local agencies to deal with the threat of terrorism which is quite likely to increase in the coming years.

It's a pleasure for me to be here. Both Senator Nunn and Senator Lugar are close friends and I look forward to, I think, a very productive seminar. Once again demonstrating that although Senator Nunn has left public service in the Senate, he has not left public service as far as the nation is concerned.

It's a pleasure for me to be here, Sam.

Senator Nunn: Thank you very much, Bill.

...Let me ask if there are any questions for Secretary of Defense Cohen.

Q: The dual containment policy in Iran and Iraq, do you think that's conducive to regional stability in that region? And do you think (it) can cause further terrorism in the United States? That type of containment policy in the Middle East.

A: I think Secretary Albright articulated our policy as far as dealing with Iraq, that it's clear that we have been unable to strike any kind of a productive relationship with Saddam Hussein, and as soon as Saddam Hussein is no longer the head of that government, that there's new regime that follows him, that we will look forward to finding ways in which we could engage them in a much more productive fashion, particularly after they comply with all of the UN sanctions. There's an eagerness on our part to do that. But I think as long as he remains in office as the head of that state, it's unlikely that we could have anything but the current policy in place, with very little prospects for relief.

With respect to Iran, I think Iran continues to present a long term threat to the region. They are acquiring and have acquired weapons of mass destruction, substantial levels of chemicals and we believe biological weapons as well. They have made an effort to acquire nuclear capability. So I think that our policy of dual containment is the right one, and we are going to encourage our allies to support that one.

Q: What does it mean that Clinton (inaudible) proliferation?

A: To the extent that we see the level of communication available today, the Internet and other types of interwoven communicative skills and abilities, we're going to see information continue to spread as to how these weapons can be, in fact, manufactured in a home-grown laboratory, as such. So it's a serious problem as far as living in the information age that people who are acquiring this kind of information will not act responsibly, but rather act in a terrorist type of fashion.

We've seen by way of example of the World Trade Center the international aspects of international terrorism coming to our home territory. We've also seen domestic terrorism with the Oklahoma bombing. So it's a real threat that's here today. It's likely to intensify in the years to come as more and more groups have access to this kind of information and the ability to produce them

Q: How prepared is the U.S. Government to deal with (inaudible)?

A: I think we have to really intensify our efforts. That's the reason for the Nunn/Lugar II program. That's the reason why it's a local responsibility, as such, but the Department of Defense is going to be taking the lead as far as supervising the interagency working groups, and to make the assessments as to what needs to be done. So we're going to identify those 120 cities and work with them very closely to make sure that they can prepare themselves for what is likely to be a threat well into the future.

Q: Let me ask you specifically about last week's scare here in Washington, and what we might have learned from how prepared we are to deal with that (inaudible), at B'nai Brith.

A: Well, it points out the nature of the threat. It turned out to be a false threat under the circumstances. But as we've learned in the intelligence community, we had something called < and we have James Woolsey here to perhaps even address this question about phantom moles. The mere fear that there is a mole within an agency can set off a chain reaction and a hunt for that particular mole which can

paralyze the agency for weeks and months and years even, in a search. The same thing is true about just the false scare of a threat of using some kind of a chemical weapon or a biological one. There are some reports, for example, that some countries have been trying to construct something like an Ebola Virus, and that would be a very dangerous phenomenon, to say the least. Alvin Toffler has written about this in terms of some scientists in their laboratories trying to devise certain types of pathogens that would be ethnic specific so that they could just eliminate certain ethnic groups and races; and others are designing some sort of engineering, some sort of insects that can destroy specific crops. Others are engaging even in an eco-type of terrorism whereby they can alter the climate, set off earthquakes, volcanoes remotely through the use of electromagnetic waves.

So there are plenty of ingenious minds out there that are at work finding ways in which they can wreak terror upon other nations. It's real, and that's the reason why we have to intensify our efforts, and that's why this is so important.

Q: What response to (inaudible)?

A: We hope we will have access to the defector. In fact I was recently in South Korea and talked with various officials in South Korea. As soon as they complete their own interrogation of this defector, we will have access to that individual. But much of what he has said to date is reflected in the writings that he prepared last year. This is prior to his defection. One would not expect a potential defector to be writing about anything other than what the official doctrine or dogma is of the North Korean government at that time. He is saying essentially what we have known for a long, long time. Namely, that North Korea poses a very serious threat against South Korea, and potentially even Japan, by virtue of having the fourth largest army in the world, by having 600,000 or more troops poised within 100 kilometers of Seoul, of possessing many SCUD missiles, also the potential of chemically armed warheads, the attempt to acquire nuclear weapons. So we know they have this potential, and the question really is going to be what's in their hearts and minds at this point? Do they intend to try to launch such an attack in the immediate,

foreseeable future? That we can only speculate about, but that's the reason why we are so well prepared to defend against such an attack to deter it; and to send a message that it would be absolutely an act of suicide for the North Koreans to launch an attack. They could do great damage in the short run, but they would be devastated in response. So we're hoping we can find ways to bring them to the bargaining table the Party of Four Talks and see if we can't put them on a path toward peace instead of threatening any kind of devastating attack upon the South.

Q: ...a little bit about the situation in (inaudible)?

A: I really don't have much more information than has been in the press at this point. The Department has not been called upon to act in this regard just yet, so I'm not at liberty to give you any more information than you already have

Q: ...the Administration's plans to expand NATO to more European countries. Is there a terrorism element? Or will expanding NATO help you in any way in terms of (inaudible)? Or is it really unrelated?

A: I think the two are unrelated. There is a legitimate debate that will take place in terms of the pace of enlargement or whether there should be enlargement. Secretary Albright and I testified last week before the Senate Armed Services Committee, and it was a very, I think, productive debate. It's something that Senator Nunn, I think, feels very strongly about as well. The two of us, I think, found ourselves on the Senate Floor last year saying it was time for the American people to start debating this issue. So it's very important and there will be legitimate differences of opinion, but it's important that we bring this to the Senate for full debate and disclosure, and bring it to the American people. But I doubt if it's related to the spread of terrorism whatsoever.

Senator Nunn: Thank you very much

IT'S NOT ONLY GREENHOUSE GAS EMISSIONS: WASHINGTON'S NEW WORLD ORDER WEAPONS HAVE THE ABILITY TO TRIGGER CLIMATE CHANGE

Prepared by Michel Chossudovsky

The important debate on global warming under UN auspices provides but a partial picture of climate change; in addition to the devastating impacts of greenhouse gas emissions on the ozone layer, the World's climate can now be modified as part of a new generation of sophisticated "non-lethal weapons." Both the Americans and the Russians have developed capabilities to manipulate the World's climate.

In the US, the technology is being perfected under the High-frequency Active Aural Research Program (HAARP) as part of the ("Star Wars") Strategic Defence Initiative (SDI). Recent scientific evidence suggests that HAARP is fully operational and has the ability of potentially triggering floods, droughts, hurricanes and earthquakes. From a military standpoint, HAARP is a weapon of mass destruction. Potentially, it constitutes an instrument of conquest capable of selectively destabilising agricultural and ecological systems of entire regions.

While there is no evidence that this deadly technology has been used, surely the United Nations should be addressing the issue of "environmental warfare" alongside the debate on the climatic impacts of greenhouse gases...

* * *

Despite a vast body of scientific knowledge, the issue of deliberate climatic manipulations for military use has never been explicitly part of the UN agenda on climate change. Neither the official delegations nor the environmental action groups participating in the Hague Conference on Climate Change (CO6) (November 2000) have raised the broad issue of "weather warfare" or "environmental modification techniques (ENMOD)" as relevant to an understanding of climate change.

The clash between official negotiators, environmentalists and American business lobbies has centered on Washington's outright refusal to abide by commitments on carbon dioxide reduction targets under the 1997 Kyoto protocol.¹ The impacts of military technologies on the World's climate are not an object of discussion or concern. Narrowly confined to greenhouse gases, the ongoing debate on climate change serves Washington's strategic and defense objectives.

"WEATHER WARFARE"

World renowned scientist Dr. Rosalie Bertell confirms that "US military scientists ... are working on weather systems as a potential weapon. The methods include the enhancing of storms and the diverting of vapor rivers in the Earth's atmosphere to produce targeted droughts or floods."² Already in the 1970s, former National Security advisor Zbigniew Brzezinski had foreseen in his book "Between Two Ages" that: "Technology will make available, to the leaders of major nations, techniques for conducting secret warfare, of which only a bare minimum of the security forces need be appraised... [T]echniques of weather modification could be employed to produce prolonged periods of drought or storm."

Marc Filterman, a former French military officer, outlines several types of "unconventional weapons" using radio frequencies. He refers to "weather war," indicating that the U.S. and the Soviet Union had already "mastered the know-how needed to unleash sudden climate changes (hurricanes, drought) in the early 1980s."³ These technologies make it "possible to trigger atmospheric disturbances by using Extremely Low Frequency (ELF) radar [waves]." ⁴

A simulation study of future defense "scenarios" commissioned for the US Air Force calls for:

"US aerospace forces to 'own the weather' by capitalizing on emerging technologies and focusing development of those technologies to war-fighting applications... From enhancing friendly operations or disrupting those of the enemy via small-scale tailoring of natural weather patterns to complete dominance of global communications and counterspace control, weather-modification offers the war fighter a wide-range of possible options to defeat or coerce an adversary... In the United States, weather-modification will likely become a part of national security policy with both domestic and international applications. Our government will pursue such a policy, depending on its interests, at various levels. ⁵

THE HIGH-FREQUENCY ACTIVE AURAL RESEARCH PROGRAM (HAARP)

The High-Frequency Active Aural Research Program (HAARP) based in Gokoma Alaska --jointly managed by the US Air Force and the US Navy-- is part of a new generation of sophisticated weaponry under the US Strategic Defense Initiative (SDI). Operated by the Air Force Research Laboratory's Space Vehicles Directorate, HAARP constitutes a system of powerful antennas capable of creating "controlled local modifications of the ionosphere". Scientist Dr. Nicholas Begich --actively involved in the public campaign against HAARP-- describes HAARP as:

"A super-powerful radiowave-beaming technology that lifts areas of the ionosphere [upper layer of the atmosphere] by focusing a beam and heating those areas. Electromagnetic waves then bounce back onto earth and penetrate everything -- living and dead." ⁶

Dr. Rosalie Bertell depicts HAARP as "a gigantic heater that can cause major disruption in the

ionosphere, creating not just holes, but long incisions in the protective layer that keeps deadly radiation from bombarding the planet." 7

MISLEADING PUBLIC OPINION

HAARP has been presented to public opinion as a program of scientific and academic research. US military documents seem to suggest, however, that HAARP's main objective is to "exploit the ionosphere for Department of Defense purposes." 8 Without explicitly referring to the HAARP program, a US Air Force study points to the use of "induced ionospheric modifications" as a means of altering weather patterns as well as disrupting enemy communications and radar.9

According to Dr. Rosalie Bertell, HAARP is part of a integrated weapons' system, which has potentially devastating environmental consequences:

"It is related to fifty years of intensive and increasingly destructive programs to understand and control the upper atmosphere. It would be rash not to associate HAARP with the space laboratory construction which is separately being planned by the United States. HAARP is an integral part of a long history of space research and development of a deliberate military nature. The military implications of combining these projects is alarming. ... The ability of the HAARP / Spacelab/ rocket combination to deliver very large amount of energy, comparable to a nuclear bomb, anywhere on earth via laser and particle beams, are frightening. The project is likely to be "sold" to the public as a space shield against incoming weapons, or, for the more gullible, a device for repairing the ozone layer. 10

In addition to weather manipulation, HAARP has a number of related uses:

"HAARP could contribute to climate change by intensively bombarding the atmosphere with high-frequency rays... Returning low-frequency waves at high intensity could also affect people's brains, and effects on tectonic movements cannot be ruled out. 11.

More generally, HAARP has the ability of modifying the World's electro-magnetic field. It is part of an arsenal of "electronic weapons" which US military researchers consider a "gentler and kinder warfare". 12

WEAPONS OF THE NEW WORLD ORDER

HAARP is part of the weapons arsenal of the New World Order under the Strategic Defense Initiative (SDI). From military command points in the US, entire national economies could potentially be destabilized through climatic manipulations. More importantly, the latter can be implemented without the knowledge of the enemy, at minimal cost and without engaging military personnel and equipment as in a conventional war.

The use of HAARP -- if it were to be applied-- could have potentially devastating impacts on the World's climate. Responding to US economic and strategic interests, it could be used to selectively modify climate in different parts of the World resulting in the destabilization of agricultural and ecological systems.

It is also worth noting that the US Department of Defense has allocated substantial resources to the development of intelligence and monitoring systems on weather changes. NASA and the Department of Defense's National Imagery and Mapping Agency (NIMA) are working on "imagery for studies of flooding, erosion, land-slide hazards, earthquakes, ecological zones, weather forecasts, and climate change" with data relayed from satellites. 13

POLICY INERTIA OF THE UNITED NATIONS

According to the Framework Convention on Climate Change (UNFCCC) signed at the 1992 Earth Summit in Rio de Janeiro:

"States have... in accordance with the Charter of the United Nations and the principles of international law, the (...) responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." 14

It is also worth recalling that an international Convention ratified by the UN General Assembly in 1977 bans "military or other hostile use of environmental modification techniques having widespread, long-lasting or severe effects."15 Both the US and the Soviet Union were signatories to the Convention. The Convention defines "'environmental modification techniques' as referring to any technique for changing--through the deliberate manipulation of natural processes--the dynamics, composition or structure of the earth, including its biota, lithosphere, hydrosphere and atmosphere or of outer space." 16

Why then did the UN --disregarding the 1977 ENMOD Convention as well as its own charter-- decide to exclude from its agenda climatic changes resulting from military programs?

EUROPEAN PARLIAMENT ACKNOWLEDGES IMPACTS OF HAARP

In February 1998, responding to a report of Mrs. Maj Britt Theorin --Swedish MEP and longtime peace advocate--, the European Parliament's Committee on Foreign Affairs, Security and Defense Policy held public hearings in Brussels on the HAARP program.17 The Committee's "Motion for Resolution" submitted to the European Parliament:

"Considers HAARP... by virtue of its far-reaching impact on the environment to be a global concern and calls for its legal, ecological and ethical implications to be examined by an international independent body...; [the Committee] regrets the repeated refusal of the United States Administration... to give evidence to the public hearing ...into the environmental and

public risks [of] the HAARP program." 18.

The Committee's request to draw up a "Green Paper" on "the environmental impacts of military activities", however, was casually dismissed on the grounds that the European Commission lacks the required jurisdiction to delve into "the links between environment and defense". 19 Brussels was anxious to avoid a showdown with Washington.

FULLY OPERATIONAL

While there is no concrete evidence of HAARP having been used, scientific findings suggest that it is at present fully operational. What this means is that HAARP could potentially be applied by the US military to selectively modify the climate of an "unfriendly nation" or "rogue state" with a view to destabilizing its national economy.

Agricultural systems in both developed and developing countries are already in crisis as a result of New World Order policies including market deregulation, commodity dumping, etc. Amply documented, IMF and World Bank "economic medicine" imposed on the Third World and the countries of the former Soviet block has largely contributed to the destabilization of domestic agriculture. In turn, the provisions of the World Trade Organization (WTO) have supported the interests of a handful of Western agri-biotech conglomerates in their quest to impose genetically modified (GMO) seeds on farmers throughout the World.

It is important to understand the linkage between the economic, strategic and military processes of the New World Order. In the above context, climatic manipulations under the HAARP program (whether accidental or deliberate) would inevitably exacerbate these changes by weakening national economies, destroying infrastructure and potentially triggering the bankruptcy of farmers over vast areas. Surely national governments and the United Nations should address the possible consequences of HAARP and other "non-lethal weapons" on climate change.

NOTES

1. The latter calls for nations to reduce greenhouse gas emissions by an average of 5.2 percent to become effective between 2008 and 2012. See Background of Kyoto Protocol at <http://www.globalwarming.net/gw11.html>.

2. The Times, London, 23 November 2000.

3. Intelligence Newsletter, December 16, 1999.

4. Ibid.

5 Air University of the US Air Force, AF 2025 Final

Report, <http://www.au.af.mil/au/2025/> (emphasis added).

6 Nicholas Begich and Jeane Manning, *The Military's Pandora's Box*, Earthpulse Press, <http://www.xyz.net/~nohaarp/earthlight.html>. See also the HAARP home page at <http://www.haarp.alaska.edu/>).

7. See Briarpatch, January, 2000. (emphasis added).

8 Quoted in Begich and Manning, *op cit*.

9. Air University, *op cit*.

10. Rosalie Bertell, Background of the HAARP Program, 5 November, 1996, <http://www.globalpolicy.org/socecon/envronmt/weapons.htm>

11. Begich and Manning, *op cit*.

12. Don Herskovitz, *Killing Them Softly*, *Journal of Electronic Defense*, August 1993. (emphasis added). According to Herskovitz, "electronic warfare" is defined by the US Department of Defense as "military action involving the use of electromagnetic energy..." The *Journal of Electronic Defense* at <http://www.jedefense.com/> has published a range of articles on the application of electronic and electromagnetic military technologies.

13. *Military Space*, 6 December, 1999.

14. UN Framework Convention on Climate Change, New York, 1992. See complete text at http://www.unfccc.de/resource/conv/conv_002.html, (emphasis added).

15. See Associated Press, 18 May 1977.

16. *Environmental Modification Ban Faithfully Observed, States Parties Declare*, UN Chronicle, July, 1984, Vol. 21, p. 27.

17. *European Report*, 7 February 1998.

18. European Parliament, Committee on Foreign Affairs, Security and Defense Policy, Brussels, doc. no. A4-0005/99, 14 January 1999.

19. *EU Lacks Jurisdiction to Trace Links Between Environment and Defense*, *European Report*, 3 February 1999.

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HAARP Updates

Prepared by Dr. Nick Begich

HAARP continues to occupy a significant amount of our attention and has remained the focus of much of our current work. We have had the opportunity to speak out about this project in numerous radio and television programs. In addition, a number of news articles have begun to be published throughout the country on this very important subject. We are thankful to all of the media people which have granted us time to bring our work out in front of the citizenry. The issue has not slowed down in terms of general interest in the topic. The story has served as a catalyst for involvement in political and governmental affairs for many individuals.

We have received a number of articles and news clippings from across the country which has provided a good deal of material for use in this publication. One of the most interesting pieces of information arrived just after the book was published.

An article, "Behind the Russian SDI Offer: A Scientific, Technological, and Strategic Revolution", appeared in the magazine 21st Century in the summer of 1993. The article was based on a front page story appearing in a Soviet government newspaper, Izvestia, on April 2, 1993. The article disclosed a whole new area of science and invited the United States to participate in the joint development of this new technology in a "Star Wars" weapons program. The initiative indicated that the Russians were far ahead in many of the areas important to the development of this "Star Wars" technology. One of the key components of the Russian technology was their greater understanding of "nonlinear" processes involved in the generation, propagation and absorption of powerful pulses of electro-magnetic radiations.

What are "nonlinear" processes? This relates to the idea of a small input of additional energy creating a disproportionately larger output of

energy. A research scientist, Al Zielinski, recently sent us the following example of nonlinear effects:

Experiment #1

Imagine we had an unlimited amount of dominoes and we lined them up from here to, let's say, Paris. Then we could tip the first domino with 10 grams; it will fall down and cause the second domino to tumble, too, etc. The first action of 10 grams will cause all the dominoes to tumble including the last domino in Paris.

From this experiment we should understand that it is not the 10 gram action that causes all the dominoes to tumble, but the 10 gram action just creates an imbalance of the first domino. It is the gravity, however, that causes the dominoes to fall. In other words: only a 10 gram action is required to trigger a gravitational activity of all our dominoes from here to Paris.

Experiment #2

Imagine we had an unlimited amount of special dominoes of which only the first one we line up here is of normal size, and all the subsequent dominoes we line up again from here to Paris are of continuously increased size. By the time we reached Paris, the last domino block would be 1000 meters high and weigh millions of tons. Again we tip the first domino here with 10 grams, which will fall down causing all the subsequent dominoes to tumble. By the time the gravitational action reaches Paris, the last domino in Paris will smash the Eiffel Tower.

From this experiment we should understand that it is not the 10 gram action here that will smash the Eiffel Tower in Paris, but it is the gravitational energy that is picked up on the way to Paris that smashes the Eiffel Tower.

In other words: only a 10 gram action is required to trigger a non-linear gravitational activity which will cause the destruction of the Eiffel Tower.

With the above examples in mind imagine the nonlinear effects of 1 billion watts of effective radiated power being directed at the ionosphere by the HAARP transmitter. This is the first phase capability of the project. The second phase will increase the effective radiated power levels even further -- to 4.7 billion watts! In our book we point out that energy in certain frequencies when reaching the outermost portions of the ionosphere can be amplified up to 1000 times by natural processes. This phenomena has been recorded by scientists at UCLA who have observed the results of these power amplifications at a fraction of the power level which HAARP will transfer to this region. This is extremely important in considering what may occur with this level of energy. A serious environmental disaster may well be the result.



The earlier referenced article from 21st Century magazine goes on to describe the implications of the use of phased array antennas and their potentials at 1 billion watt power levels. This is the antenna array HAARP uses and the level of power it is designed to broadcast. What the article describes is a system which can be used for knocking down missiles and aircraft by effecting their guidance systems and creating atmospheric disturbances which lead to them crashing. They also talk about the ability, at lower power levels, to be able to look down from the ionosphere and detect cruise missiles and other incoming objects utilizing what was described as an advanced form of radar. Again this is exactly what has been described in the HAARP patents.

Plasma is a term for an electrically conductive state of matter generated from a gas. It can be created by action of extreme heat, powerful electromagnetic fields and by high levels of focused radio frequency energy such as the energy created with the HAARP instrument. 21st Century magazine suggests that, "The term plasmoid refers to the fact that under certain conditions a plasma can develop a self-contained, self-stabilizing structure based on the magnetic and other effects of internal configurations of electric currents within the plasma." This particular concept is important when referring to the concept of "painting the ionosphere" which was described by the military in the HAARP documents. This is in fact what the military will do with HAARP for certain applications. These plasmas are much different than those described in fusion research in that they involve very low electron energies. What is known is that although they are "cool" by comparison to fusion plasmas they are remarkably long lived and strong when generated in certain gases. Those specific gases include nitrogen and oxygen, the major components of the earth's atmosphere!

So what does all of this translate into? According to the article it is suggested that this technology can be used for modifying the ionosphere over very large areas for "over-the-horizons" telecommunications disruption, creating computer errors and perhaps even creating negative biological effects. What is known from other government documents, HAARP planning documents and International Red Cross documents is that all of this is possible with these new systems. What is also known now is that a single complex system can combine radar tracking with a speed-of-light means of destruction - the plasmoid. This is but one application of HAARP. The writers of the 21st Century article were not acquainted with the patents regarding HAARP or they would have recognized that the United States military was not interested in the Russian overture of cooperation because we already possessed the means to produce these effects. What also rings throughout the article brings us back to where we began our

research into the HAARP system two years ago - to the ideas of Nikola Tesla. A New York Times article of December 8, 1915 says:

"Nikola Tesla, the inventor, has filed patent applications on the essential parts of a machine, possibilities which test a layman's imagination and promise a parallel of Thor's shooting thunderbolts from the sky to punish those who had angered the gods... Suffice it to say that the invention will go through space with a speed of 300 miles a second, a manless ship without propelling engine or wings sent by electricity to any desired point on the globe on its errand of destruction, if destruction its manipulator wishes to effect."

'It is not a time,' said Dr. Tesla yesterday, 'to go into the details of this thing. It is founded upon a principle that means great things in peace; it can be used for great things in war. But I repeat, this is no time to talk of such things.'

'It is perfectly practicable to transmit electrical energy without wires and produce destructive effects at a distance. I have already constructed a wireless transmitter which makes this possible, and have described it in my technical publications, among which I refer to my patent number 1,119,732 recently granted. With transmitters of this kind we are enabled to project electrical energy in any amount to any distance and apply it for innumerable purposes, both in war and peace. Through the universal adoption of this system, ideal conditions for the maintenance of law and order will be realized, for then the energy necessary to the enforcement of right and justice will be normally productive, yet potential, and in any moment available, for attack and defense. The power transmitted need not be necessarily destructive, for, if distance is made to depend upon it, its withdrawal or supply will bring about the same results as those now accomplished by force of arms.'

A second article also appeared in the New York Times, on September 22, 1940 and read:

"Nikola Tesla, one of the truly great inventors, who celebrated his eighty-fourth birthday on July 10, tells the writer that he stands ready to divulge to the United States government the secret of his 'teleforce', with which, he said, airplane motors would be melted at a

distance of 250 miles, so that an invisible Chinese Wall of Defense would be built around the country..."

"This 'teleforce', he said, is based upon an entirely new principle of physics that 'no one has ever dreamed about', different from the principle embodied in his inventions relating to the transmission of electrical power from a distance, for which he has received a number of basic patents. This new type of force, Mr. Tesla said, would operate through a beam one one hundred-millionth of a square centimeter in diameter, and could be generated from a special plant that would cost no more than \$2,000,000 and would take only about three months to construct."

"The beam, he states, involves four new inventions, two of which already have been tested. One of these is a method and apparatus for producing rays 'and other manifestations of energy' in free air, eliminating the necessity for a high vacuum; a second is a method and process for producing 'very great electrical force'; the third is a method for amplifying this force and the fourth is a new method for producing 'a tremendous electrical repelling force'. This would be the projector, or gun, of the system. The voltage for propelling the beam to its objective, according to the inventor, will attain a potential of 50,000,000 volts."

"With this enormous voltage, he said, microscopic electrical particles of matter will be catapulted on their mission of defensive destruction. He has been working on this invention, he added, for many years and has recently made a number of improvements in it."

As the ideas reverberate through my mind I cannot help but to feel that we again are walking down a darkened road of destruction. We are again on a path which may in fact lead to greater problems than those we seek to solve by tampering with the ionosphere.

In March 1996 the military begins to demonstrate the earth-penetrating-tomography applications of this technology --the idea of "x-raying" the earth with ELF waves generated by HAARP. These waves will pass through every living thing in the path and may have

perceptible effects on people's health. This demonstration of this capability is critical for the military to gain the additional funding for the second phase of their project. That phase was originally estimated at \$175 million dollars and will give the military power levels of 4.7 billion watts of effective radiated power.

Politically, things are only beginning to move as the opposition to this project continues to grow. Researchers, independent scientists and most importantly lay people all over the world are beginning to let their ideas be felt on this very important issue. Elsewhere in this microbook is an essay on creating political realities. We ask all of our readers to consider taking a step for change and activating some of the ideas contained in that essay.

Waking up the Military

Prepared by Trustees for Alaska

The primary support for our efforts in opposing the HAARP program has come from conservative organizations who have, over the last year, asked us where the environmental community was on the issue. We are pleased to be joined in our opposition to HAARP with what is quickly becoming a coalition of both conservative and liberal organizations. The true American character is demonstrated when issues of mutual importance can be embraced by diverse interest groups and, most importantly, by remarkable individuals.

Please forward your own letter to John Heckscher expressing your concerns and opinions on this project. May 8, 1996 John Heckscher PL/GPIA Hanscom AFB, MA. 01731-5000 Re: High-frequency Active Auroral Research Program (HAARP) Dear Mr. Heckscher,

Trustees for Alaska, on behalf of itself, Greenpeace, National Audubon Society, Alaska Center for the Environment, Sierra Club, Alaska Wildlife Alliance, Northern Alaska Environmental Center and National Wildlife Federation, hereby request that the United States Air Force prepare a supplement to the July 1993 Final Environmental Impact Statement (FEIS) for the operation of the High-frequency Active Auroral Research Program (HAARP). As you have correctly noted in various fora (including at the recent State of Alaska House of Representatives, State Affairs Committee HAARP Oversight Hearing), the Air Force has a continuing duty to comply with the National Environmental Policy Act (NEPA) by preparing a supplemental EIS should certain conditions be met.

As detailed below, given the apparent substantial changes in the project and significant new information relevant to environmental concerns about HAARP, we believe this duty has been triggered. Should the Air Force disagree as to the mandatory nature of this duty, we still request that a supplemental EIS be prepared using your discretionary authority to do so. Finally, the Air Force should fund and

support an independent review and monitoring effort to alleviate the public's concerns about the project.

I. The National Environmental Policy Act

To put our request in context, and before we enter into a discussion of the changed factual circumstances mandating the preparation of a supplemental EIS, we set out a brief overview of the relevant legal structure. As you know, NEPA requires a federal agency to prepare an EIS whenever it undertakes a "major...action significantly affecting the quality of the human environment." 42U.S.C.'4332(2)(C). The Air Force recognized that HAARP triggered the NEPA duty to prepare an EIS and, in the summer of 1993, the Air Force, in cooperation with the Navy, released the Final Environmental Impact Statement for HAARP. See FEIS Volumes I and II (July 15, 1993). Later that year, the Air Force issued its decision to proceed with the project. See Record of Decision (ROD) (October 18, 1993).

The Council on Environmental Quality (CEQ) is the principal agency responsible for the administration of NEPA. 42U.S.C.'4342. CEQ has enacted regulations implementing NEPA. 40 C.F.R. 1500.1 et seq. The CEQ regulations require federal agencies to supplement an EIS when: (i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. 40 C.F.R. ' 1502.9(c)(1).

In addition to the CEQ regulations, each federal agency has its own set of regulations adapting the CEQ regulations to the activities of each agency. See e.g. 32 C.F.R. Part 187 (Department of Defense); 32 C.F.R. Part 989 (Department of the Air Force); 32 C.F.R. Part 775 (Department of the Navy). Consistent with the CEQ regulations, the Department of Defense regulations require EIS supplementation when: substantial changes to the proposed action are made relative to the environment of the global commons or when significant new information or circumstances, relevant to environmental concerns,

bears on the proposed action or its environmental effects on the global commons. 32 C.F.R. Part 187, Enclosure 1, para. D4; see also 32 C.F.R. Part 18, Enclosure 1, para. D4 (requiring supplementation for Department of Defense actions with effects in the United States); 32 C.F.R. 989.20(b) (same for the Air Force).

As the United States Supreme Court has stated, the test for supplementation is based on a "rule of reason": If there remains a "major federal action" to occur, and if the new information is sufficient to show that the remaining action will "affect the quality of the human environment" in a significant manner or to a significant extent not already considered, a supplemental . . . [impact statement] must be prepared. *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 373-74 (1989).

Finally, an agency also has the discretion to prepare a supplement to an EIS if it "determines that the purposes of [NEPA] will be furthered by doing so." 40 C.F.R. ' 1502.9(c)(2).

II. Factual Background

As you know, in late 1993, the Air Force, in cooperation with the Navy, began construction of HAARP in Gakona, Alaska. The main element of HAARP is a large radio wave transmitter which "utilize[s] powerful, high frequency (HF) transmissions and a variety of associated observational instruments to investigate naturally occurring and artificially induced ionospheric processes that support, enhance or degrade the propagation of radio waves." ROD at 1. Construction of the HAARP facility is currently scheduled to be completed within six or seven years and presently it runs at about ten percent of projected power levels. See O'Harra, *HAARP's Mixed Signals; Solid Research Or Menace To Alaskans*, Anchorage Daily News (April 7, 1996).

As the Air Force originally explained, HAARP is aimed at studying the ionosphere, "with particular emphasis placed on being able to better understand and use it to enhance communications and surveillance systems for both civil and defense purposes." FEIS Vol. I at iii. As an

example, one touted potential military benefit from the project is the development of a communication system for use with submerged submarines.

The Air Force, in the FEIS, detailed its view of the impacts of the project. The Air Force focused almost exclusively on the local and regional impacts of HAARP, primarily on things such as impacts to animals, degradation of air quality and vegetation loss due to construction activities. FEIS at 3-1 to 3-165. The Air Force deemed HAARP's effects to the atmosphere and biological effects to be non-existent or insignificant. See *id.*; see also ROD at Table 2.4-1. The only admitted potentially significant impact is "interference to radio communication systems and electroexplosive devices during transmitting periods." *Id.*

In the years since the EIS process was completed, several groups and individuals have raised questions concerning the uses to which HAARP will be put and the likely effects flowing from those uses. Some of these assertions are set forth in a book, published in 1995, called *Angels Don't Play This HAARP*. Manning, Begich, *Angels Don't Play This HAARP*, Earthpulse Press (1995).¹ In this book, the authors set forth a detailed and fully-referenced description of HAARP and its potential uses and effects. During the course of their research for the book, the authors found that, rather than the innocuous project described by the Air Force, HAARP represents a technology which could lead to a new class of weapons that could change our world profoundly - an all-purpose military tool. If misused, the tool could mess up the weather. It could be used against humanity in a way that would change what people think, believe and feel. . . . [HAARP could]:

- manipulate global weather;
- hurt ecosystems;
- knock out electronic communications; or
- change our moods and mental states.

A detailed recitation in this discussion of the assertions and facts contained in *Angels Don't Play This HAARP* would serve no useful

purpose; the book stands on its own as a question mark affixed to the Air Force's contrary description of the uses and effects of HAARP.² As set out below, this request is based upon questions and concerns about HAARP raised by facts surrounding both the Air Force's current intended uses for the project and scientific evidence raising questions about HAARP's effects.

III. The Air Force Should Supplement the HAARP EIS

The following discussion is organized into three sections. In the first section we set out the information, gathered since the completion of the FEIS, which suggests that substantial changes have been made to the purposes of the project as originally described and analyzed in the FEIS. These changes implicate environmental concerns with HAARP and require supplementation of the EIS.

In the second section we describe the significant new information concerning HAARP, information which is relevant to environmental concerns about the project. The data in this section also leads to the conclusion that the EIS must be supplemented.

Third, even if the Air Force does not determine that NEPA mandates it to supplement the EIS, it should do so voluntarily. As the Air Force is well aware, HAARP has resulted in a tremendous outpouring of concern about its purposes and potential effects. This controversy - well-founded in science or not - convincingly demonstrates that the public participation purposes of NEPA have not been satisfied. Thus, it is highly advisable for the Air Force to re-do the process, reaffirming its oft-stated position that HAARP is an open and above-board project and quelling the fears and concerns of so many people.

A. HAARP Has Undergone Substantial Changes

Again, as described by the Air Force, HAARP is a "scientific endeavor aimed at studying basic properties and behavior of the ionosphere, with particular emphasis placed on being able to better understand and use it to enhance communications and surveillance systems for both civil and defense purposes." (FEIS Vol. I at iii). As the Air Force

has stated both in the ROD and FEIS, the environmental concerns which flow from this rather benignly-presented project are not significant. (See e.g., ROD at Table 2.4-1).

Clearly, the Air Force's treatment of HAARP has been less than confidence-building. For example, it is incongruous for the Air Force to conclude that no significant effects will flow from HAARP (with the exception of electromagnetic and radio frequency interference which the Air Force has pledged to mitigate when an EIS is required only for those federal actions which have a "significant impact on the quality of the human environment." 42 U.S.C. ' 4332(2)(C); compare 40 C.F.R. " 1501.4(b), 1508.9 (1988) (EIS unnecessary for major federal action that does not significantly affect the environment). Certainly, the Air Force should recognize this incongruity and realize that it provides a reasonable basis for the public to question the accuracy of other assertions made by the Air Force.

In any event, plentiful evidence exists that raises questions about HAARP and its current and intended uses and effects. In 1994, for example, the Senate Committee on Armed Services stated the following in a report attached to its passage of the National Defense Authorization Act for Fiscal Year 1995: The committee is aware of the promising results of the high frequency active auroral research program (HAARP). This transmitter in Alaska, besides providing a world class research facility for ionospheric physics, could allow earth-penetrating tomography over most of the northern hemisphere. Such a capability would permit the detection and precise location of tunnels, shelters, and other underground shelters. The absence of such a capability has been noted as a serious weakness in the Department of Defense plans for precision attacks on hardened targets and for counterproliferation. 103d Congress, 2d session, Report 103-282 at 86 (June 14, 1994).The Armed Services Committee went on to state that it would condition future funds for a "full-scale HAARP facility" on the Department of Defense's commitment to exploring the counterproliferation possibilities of HAARP.

The very next year, the Committee on Appropriations recommended passage of the Department of Defense Appropriation Bill for 1996, with specific recommendation that the Senate include substantial monies for HAARP. 104th Congress, 1st session, Report 104-24 at 190 (July 28, 1995). This appropriation appeared under the heading "Counterproliferation support - advanced development."

Nowhere in the HAARP FEIS does the Air Force so much as mention, much less evaluate, the earth-penetrating tomography aspects of HAARP or its use for counterproliferation purposes. Indeed, the Index to the FEIS does not even contain a reference to these terms. (See FEIS Vol. I at 8-1.)

In response to a letter from a concerned citizen who raised this issue, the Air Force admitted that earth-penetrating tomography was "not specifically documented in the EIS" yet stated that this use is "within original design and operating parameters which have been identified in the FEIS." (Letter from John Heckscher, Air Force, to Arthur Gray, NTIA November 17, 1994). Given the total lack of reference to earth-penetrating tomography and counter-proliferation in the FEIS, this statement does not appear supported by the record. (See 40C.F.R.'1502.8 EIS' "shall be written in plain language . . . so that decisionmakers and the public can readily understand them"); 40 C.F.R. ' 1502.13 (agency shall "briefly specify the underlying purpose and need" of the proposed action). Indeed, given the attention focused on this specific application of HAARP and the substantial federal monies apparently dedicated to it, the Air Force should not so easily dismiss this issue.

In the same Senate Report referencing the counterproliferation purposes of HAARP, the Senate also recommended substantial appropriations for HAARP under the heading "advanced weapons." 104th Congress, 1st session, Report 104-24 at 190 (July 28, 1995). The Committee provided no explanation for this appropriation. Available literature on advanced weapons systems seems to support the ability of a HAARP-type facility to be used for these purposes. See e.g.,

International Committee of the Red Cross, Expert Meeting on Certain Weapons Systems and on Implementation Mechanisms in International Law (July 1994); see also Metz, Kievit, The Revolution In Military Affairs And Conflict Short Of War, Strategic Studies Institute, U.S. Army War College at 9 (July 1994); Heating Up The Air Waves, Jane's Defense Weekly, Vol. 23, No.13; Hayeslip, Preszler, NIJ Initiative On Less-Than-Lethal Weapons, National Institute of Justice! at 16-18 (March 1993); Edwardson, The Right To Prevent The Commission Of International Crimes, International Health And Alternative Medicine Conference (October 9-10, 1993); Smith, Best, Electromagnetic Man, Chapter 10 (St. Martin's Press, N.Y. 1989).

Nevertheless, "advanced weaponry" is certainly not within the Air Force's claimed purposes for HAARP. See FEIS. Further, in several fora, the Air Force and other project participants repeatedly have assured the public that there is no "classified" aspect to HAARP. See e.g., Tape of Alaska State House of Representatives, Committee on State Affairs, HAARP Oversight Hearing (April 2, 1996); see also O'Harra, "HAARP's Mixed Signals; Solid Research Or Menace To Alaskans", Anchorage Daily News (April 7, 1996). Thus, if indeed there is an "advanced weaponry" aspect to HAARP, the Air Force's "open-project" pronouncements counsel that such use would be public knowledge.

Consequently, it appears that HAARP has indeed taken on a different direction than the Air Force originally reported. NEPA thus requires supplementation of the EIS to address these uses of HAARP and their effects on the environment. 40 C.F.R. ' 1502.9(c)(1)(i)

B. Significant New Information Exists Concerning HAARP

The question whether significant new circumstances or information will require EIS supplementation turns on several factors. These factors include the environmental significance of the circumstances or information, its probable accuracy and the degree to which the agency had considered the circumstances or information and evaluated its impact. See e.g., Warm Springs Dam Task Force v. Gribble, 621 F.2d 1017 (9th Cir. 1980).

Based on three draft and final reports concerning the Radiofrequency Radiation (RFR) bioeffects of HAARP, the Air Force concluded in 1993 that there would be "[n]o bioeffects from RFR." (ROD at 9; see also FEIS Vol. I at 3-146, 3-149, 3-150.) The primary concern with non ionizing radiation such as RFR, as outlined by the Air Force, is the potential for "gross heating"; that is, heat produced at relatively high RFR intensities exceeding the thermoregulatory capabilities of a given animal and thus causing deleterious effects. See FEIS Vol. I at 3-147.

The Air Force also noted, however, that "[s]ome researchers have reported bioeffects at RFR levels below those giving rise to gross heating." The Air Force dismissed these effects because "such reports are not universally accepted by the large majority of the research community."

New scientific information, gathered since the 1992 date of the studies relied upon by the Air Force, strongly counsel that the Air Force rethink this conclusion and reexamine the bioeffects of HAARP. As an initial matter, it is important to note that while HAARP generates electromagnetic waves at frequencies "between approximately 3 kilohertz (kHz) and 300 gigahertz (Ghz)," (FEIS Vol. I at 3-146,4) it does have a secondary effect in the ELF range. (HAARP Research and Applications, A Joint Program of Phillips Laboratory and the Office of Naval Research, Executive Summary at June 6, 1995). Specifically, the Office of Naval Research stated that HAARP, "using the ionosphere as an active medium, can provide secondary radiation sources in the IR, visible, and ULF/ELF/VLF ranges."

A frequent scholar and renowned expert in the field of biophysics writes that "there is evidence from a number of studies that extremely low frequency (ELF) fields in the range 0-100 Hz and radiofrequency (RF) fields amplitude-modulated in this same ELF range . . . are involved in essential physiological functions in marine vertebrates, birds and mammals." Adey, W.R., "Biological Effects of Electromagnetic Fields", *Journal of Cellular Biochemistry* 51:410 at 410-411 (1993). Further, "evidence has mounted confirming

occurrence of bioeffects of RM fields" in the low-frequency range. (see also Polk, Handbook of Biological Effects of Electromagnetic Fields, Chapter 12 (2d ed. CRC Press, Fla. 1996); Litovitz, Montrose, Doinov, Brown and Barber, "Superimposing Spatially Coherent Electromagnetic Noise Inhibits Field Induced Abnormalities In Chick Embryos", Journal Bioelectromagnetics, Vol. 15, No.2 at 105-113 (1994); Adey, Whispering Between Cells: Electromagnetic Fields And Regulatory Mechanisms In Tissue, Frontier Perspectives, Vol. 3, No. 2 (Fall 1993); Smith, Best, Electromagnetic Man, Chapter 10 (St. Martin's Press, N.Y. 1989).

Indeed, the Air Force itself, at least at some levels, is aware of the biological effects of ELF fields. For example, Dr. Cletus Kanavy, chief of the biological effects group of the Phillips Laboratory's Electromagnetic Effects Division at Kirkland Air Force Base in New Mexico has stated that "the entire issue of human interaction with electromagnetic (RF & microwave) radiation is...a major national population health concern." Biological Effects of Microwave Radiation: A White Paper, Microwave News at 12 (September/October 1993). Dr. Kanavy noted the "large amount of data [], both animal experimental and human clinical [], to support the existence of chronic, nonthermal effects." Id. These effects include behavioral aberrations, neural network perturbations, fetal (embryonic) tissue damage (inducing birth defects), cataractogenesis, altered blood chemistry, metabolic changes and suppression of the endocrine and immune systems.

Dr. Kanavy also notes that:

"[r]esearchers stress the chronic, nonthermal nature of these effects as opposed to acute exposure level thermal effects.⁶ Ample experimental evidence exists from credible researchers from well-established and highly regarded institutions, both government and university, to justify a national research program into the full spectrum of biological effects of electromagnetic radiation".

Further, the Air Force's reliance on standards established by the Institute of Electrical and Electronics Engineers (IEEE) to downplay the likelihood of adverse bioeffects, FEIS Vol. I at 3-149, is seriously

misplaced. In discussing the IEEE and the issue of bioeffects, Dr. Kanavas states:

"The U.S. has lagged behind badly in this kind of research. Initially, the principal concern for human exposure to microwave radiation was that of thermal heating of the tissues. Permissive exposure limits were based on such criteria. These limits...are...derived by the...IEEE. Under IEEE, a blue-ribbon panel of experts periodically reviews the research database and assesses the need to revise the standards. Until 1991, these standards did not consider the possible biological effects of "pulsed" microwaves. The 1991 standards do address the pulse condition (rather shabbily, I believe), place [some] restrictions...and continue to use the continuous wave time averaging technique for thermal criteria. The existence of non-thermal effects is essentially denied by omission...The literature published in the late 1980s is abundant with information on nonthermal effects which are produced at levels below the [IEEE-derived] standards."

Perhaps the Air Force rejected full consideration and analysis of the biological effects of ELF fields in 1993 (when the Air Force issued its ROD for HAARP) due to the rather cutting-edge nature of then-available information. This excuse no longer exists. Scientific understanding of bioeffects has evolved now to the point where the Air Force can no longer deny its existence or simply dismiss this information as "not universally accepted by the large majority of the research community." FEIS Vol. I at 3-147. This is especially true when the Air Force's own expert states that bioeffects are a "major population health concern." White Paper at 12.

NEPA regulations mandate the preparation of a supplemental EIS when there "are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." 40 C.F.R. ' 1502.9(c)(1). The scientific information on the bioeffects of ELF fields, coupled with the fact that HAARP causes ELF fields, mandates that the Air Force supplement the HAARP EIS.

C. NEPA Purposes Counsel Supplementation

The increasing controversy over the type and range of HAARP's effects and public concern and outright fear of the project, especially among those who live near the HAARP site, counsel that the Air Force reopen the EIS process, if only to quell these fears and concerns. Indeed, NEPA and its implementing regulations contemplate just this type of action. The Air Force "may also prepare supplements [if it] determines that the purposes of [NEPA] will be furthered by doing so." 40 C.F.R. ' 1502.9(c)(2). As described below, NEPA purposes would certainly be furthered by supplementing the EIS.

Congress established through NEPA that it is the policy of the federal government to "create and maintain conditions under which man and nature can exist in productive harmony." 42 U.S.C. ' 4331(a). The goals of NEPA, intended to further this policy, are to "place upon [a federal] agency the obligation to consider every significant aspect of the environmental impact of [a] proposed action [and to] ensure[] that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process." *Baltimore Gas & Elec. Co. v. NRDC*, 462 U.S. 87 (1983). An EIS, furthermore, "serves as an environmental full disclosure law, providing information which Congress thought the public should have concerning the particular environmental costs involved in a project." *Silva v. Lynn*, 482 F.2d 1282 (1st Cir. 1973); see also *Sierra Club v. Hodel*, 848 F.2d 1068, 1094 (10th Cir. 1988); *City of Aurora v. Hunt*, 749 F.2d 1457, 1465 (10th Cir. 1984).

As the CEQ states, "public scrutiny [is] essential to implementing NEPA" and "NEPA's purpose is not to generate paperwork -- even excellent paperwork -- but [rather] to foster excellent decisions." 40 C.F.R. ' 1500.1(b), (c). CEQ speaks to the importance of the public participation purposes of NEPA in various regulations. For example, the regulations provide that federal agencies "shall to the fullest extent possible . . . [e]ncourage and facilitate public involvement in decisions which affect the quality of the human environment." 40

C.F.R. ' 1500.2(d); see also 40 C.F.R. ' 1505.5(a) (agencies should make diligent efforts to involve the public).

Evidence of this concern emanates from Alaska, where some long-time members of the State legislature have stated that they have never had so many constituents voice fear and concern on one topic. (See e.g., Tape of Alaska State House of Representatives, Committee on State Affairs, HAARP Oversight Hearing, April 2, 1996); see also O'Harra, "HAARP's Mixed Signals; Solid Research Or Menace To Alaskans", Anchorage Daily News (April 7, 1996). In response to the concerns of their constituents, several members of the State Legislature have held oversight hearings on HAARP and stated that they would seek agreement from the Air Force for a thorough, public, review of the project.

Furthermore, significant public debate about HAARP has occurred in many other areas of the globe, including a significant debate played out on the internet over the last couple of years. See Att. A at F-11. Indeed, HAARP has been the subject of numerous documentary and investigative television programs aired in Canada, Great Britain, Japan and the United States. Additionally, radio talk shows have held innumerable programs focused on HAARP.

The vast majority of these programs have focused on the types of concerns expressed above; that the purposes and effects of HAARP were never fully disclosed and that the effects have the potential to be much more far-reaching than those noted in the FEIS.

In contrast, the EIS process resulted in comments from the public primarily focused on construction, physical presence and radio-interference effects of HAARP. See e.g. FEIS Vol. II, sec. 11.0. The commenting public was most concerned with issues such as gravel source, specific siting questions, impact on migrating birds and impact to communication and transportation from HAARP.

In the end, NEPA's integrity is tied to the participation of the public in the process. *Sierra Club v. Hodel*, 848 F.2d 1068 (10th Cir. 1988); Note, *The Tenth Circuit Rediscovered NEPA's Public Participation Policies In*

Sierra Club v. Hodel, 30 Natural Resources J. 203, 215 (1988). While the Air Force may have made a good faith effort to further the purposes of NEPA through the EIS process, for whatever reason, intense controversy about the HAARP continues. Therefore, we request that the Air Force exercise its discretion to supplement the EIS through a NEPA process which addresses the concerns of the affected public.

IV. The Air Force Should Support Independent Review And Monitoring

Finally, regardless of whether the Air Force agrees to supplement the HAARP EIS, the Air Force should establish and support an independent review and monitoring effort for HAARP. This effort would be aimed at objectively confirming for the public the Air Force's representations about HAARP. In this manner, the concerned public's distrust and fear of HAARP could be directly confronted and diffused. An independent monitoring effort would result in increased confidence among both the local people, who must live with HAARP in their backyard, and those far away but who are concerned about the reach of HAARP, that it cannot and will not cause the biological and other effects of which they are so concerned.

Such a program need not be complicated. The purpose of the effort would be to independently verify that the HAARP facility is operating in the manner espoused by the project participants and to make independent determinations about whether the facility is operating with safe levels. This is exactly the type of program members of the State legislature have requested and is also supported by many concerned members of the public and the scientific community.

Specifically, the Air Force could work with the public, the State Legislature and perhaps the University of Alaska to convene a conference on HAARP. Different viewpoints could be represented at such a conference, which could then provide a foundation for an independent review and monitoring effort.

Finally, implementation of an independent monitoring program could also be relevant to whether or not a supplemental EIS is necessary. See e.g., *Portland Audubon Soc'y v. Babbitt*, 998 F.2d 705 (9th Cir. 1993); *State of California v. Watt*, 683 F.2d 1253 (9th Cir. 1982), rev'd on other grounds sub nom, *Secretary of Interior v. State of California*, 464 U.S. 312 (1983) (alternative agency procedures relevant to need to prepare a supplement to an EIS); *New England Coalition on Nuclear Pollution v. Nuclear Regulatory Comm'n*, 582 F.2d 87 (1st Cir. 1978) (same).

V. Conclusion

While seemingly benign if one were to look solely to the government's description of the purpose, use and effects of HAARP, information from the popular press, independent scientists and investigative researchers raises flags of caution. This information suggests that HAARP might be a government project with potential impacts on many levels, including far-reaching and little understood biological effects on humans and animals.

Despite the data supporting the claims of these project critics, the Air Force has not analyzed these admittedly Jules Verne-esque qualities or potentials of HAARP. Nevertheless, an evaluation of the history of the technology used in HAARP suggests the possibility of exactly these kind of uses for HAARP. To the extent that the government is either unknowingly or intentionally exploring and implicating these types of uses and effects of HAARP, HAARP represents a potentially significant global threat.

To be perfectly clear, we do not suggest by this request that the Air Force, the United States or other project proponents have intended to deceive or otherwise mislead the public about HAARP, its purposes and effects. The fact of the matter is, however, that there simply is not enough information about HAARP to answer all the questions raised and referenced above and in various other fora. Perhaps it is, as the ROD and FEIS suggest, an environmentally-benign project which may bring only beneficial effects to mankind. If this is the case, Alaska

would rightfully be proud to be the site for such a worthy endeavor. On the other hand, significant controversy has surrounded the project since its inception and, as detailed above, the questions raised about HAARP have a reasonable basis in fact.

The continuing and serious questions about HAARP reveal that, regardless of the attempts of the Air Force to comply with the law and otherwise inform the public, these efforts have failed. Supplementing the EIS to address these concerns, and establishing an independent review and monitoring program to provide objective evidence of the Air Force's honesty and good faith, would go a long way in changing the current climate of uncertainty and mistrust.

Thank you very much for your careful consideration of this request. Given the rather lengthy time it can take for an agency to consider a request such as this, we would appreciate some indication of the time frame in which you feel it would be reasonable for us to expect a decision. For this purpose, and to direct any comments, questions or further information having to do with this request, please contact:

Peter Van Tuyn, Litigation Director
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Anchorage, Ak, 99501
e-mail : trustees@igc.org

Sincerely,
Peter Van Tuyn

cc (w/out att.): Vice President Al Gore
Governor Tony Knowles
United States Senator Ted Stevens
State of Alaska Representative Gene Kubina
State of Alaska Representative Jeannette James
Tim Wirth, United States State Department
Katie McGinty, United States Council on Environmental Quality

1. We assume that the Air Force is familiar with this book and has a copy of it. If this is not the case, please let us know and we will gladly provide one for the record. Throughout the remainder of this request letter, we reference multiple authorities, most of which, due to their HAARP-focused subject matter, we assume the Air Force has in its possession. To the extent this is not true, again, just let us know and we will provide copies for the record. Other, less HAARP-specific or more recent references are provided as attachments to this request.

2. Several other popular press articles have raised similar questions about HAARP and its purpose and effects. See e.g., Farmer, "Mystery in Alaska", *Popular Science* (September 1995); Zickuhr, "Project HAARP: The Military's Plan To Alter the Atmosphere", *Earth Island Journal* (1994). Most recently, the Anchorage Daily News presented a cover story on HAARP in its *We Alaskans Sunday* magazine. O'Harra, "HAARP's Mixed Signals; Solid Research Or Menace To Alaskans", *Anchorage Daily News* (April 7, 1996).

3. The Air Force recently stated that "biologists and environmental specialists advising HAARP indicated that there is no rational reason to be concerned" about biological and geophysical issues regarding ionospheric facilities. Letter from John Heckscher, Air Force, to NTIA (Nov. 17, 1994).

4. A recent report from the Office of Naval Research describes HAARP's operating frequency somewhat narrower than the FEIS: "the primary energy of [HAARP] is confined in the frequency range from 2.8 to 10 Mhz." *HAARP Research and Applications, A Joint Program of Phillips Laboratory and the Office of Naval Research, Executive Summary* at 6 (June 1995).

5. There are over 50 references dealing with the topic of electromagnetic fields and bioeffects cited in this article alone. See *id.* at 415-16.

6. Compare FEIS at 3-146 to 3-147 (noting "gross heating and subsequent thermal distress" concern).

